| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 160 | 0.70 | 17 | 123 |

REGISTERED CIVIL ENGINEER — DATE 3/12/10

PLANS APPROVAL DATE

RAMSEY J. HISSEN, No. C-39608, Exp. 12/31/10, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

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OAKLAND, CA 94607

URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113

## GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST VERSION OF THE CALTRANS STANDARD PLAN AND SPECIFICATIONS.
2. CALL UNDERGROUND SERVICE ALERT 48 HOURS BEFORE EXCAVATION U.S.A. (800) 277-2600.
3. ALL ELECTRICAL AND CMS EQUIPMENT, INFRASTRUCTURE, LANDSCAPING OR BUILDINGS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL ELECTRICAL AND CMS EQUIPMENT INCLUDING CONDUITS, JUNCTION AND SPLICE EQUIPMENT RACK ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
5. SERVICE EQUIPMENT, AND CMS CABINET ENCLOSURES, CONTROLLER ASSEMBLIES, CMS AND OTHER ELECTRICAL EQUIPMENT ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATION SHALL BE DETERMINED TO SUIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
6. ALL EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHOWN ON THE PLANS IS FOR REFERENCE AND SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. LOCATIONS ARE APPROXIMATED. ANY DAMAGE TO THE EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.
7. NEW CIRCUIT BREAKERS TO BE INSTALLED TO EXISTING PANEL BOXES SHALL MATCH THE EXISTING TYPE OR APPROVED BY THE ENGINEER AS REQUIRED.
8. ALL DIMENSIONS INDICATED ARE TO BE VERIFIED IN FIELD PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR SHALL IDENTITY AND VERIFY ALL EXISTING UTILITIES, POWER SOURCES AND POWER CONSUMPTIONS AS REQUIRED OR NEEDED AS SHOWN ON THE PLANS PRIOR TO COMMENCING WORK.
10. SEE STRUCTURAL PLANS FOR EXACT LOCATION OF CMS STRUCTURES, FRAMES AND MOUNTING BRACKETS.
11. ALL ABOVE GROUND CONDUIT SHALL BE SUPPORTED AT A MINIMUM OF EVERY 5 FEET.
12. ALL ELECTRICAL ITEMS THAT USE ANCHORS TO ATTACH TO THE CONCRETE STRUCTURES SHALL USE STAINLESS STEEL POWER STUD ANCHORS-THREADED VERSION SIZED PER MANUFACTURER RECOMMENDATION AND EPOXY ANCHOR HOLES USING SEALANT WITH A RATED LIFE OF 25 YEARS OR GREATER.
13. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE CEC, NEC & NATIONAL ELECTRICAL SAFETY CODE. ALL COMPONENTS SHALL BE PROPERLY GROUNDED AND BONDED PER NEC REQUIREMENTS. ALL COMPONENTS INCLUDING CONDUITS JUNCTION BOXES, CABLING, EQUIPMENT, AND CABINETS SHALL BE CLEARLY LABELED WITH PROPER TAGS, NAME PLATES, AND I.D. LABELS.
14. CONTRACTOR SHALL USE TYPE 1 CONDUIT IN TUNNEL AND TRENCH, TYPE 2 CONDUIT FOR EXPOSED CONDITIONS AND TYPE 4 FLEXIBLE CONDUIT AS SHOWN ON PLANS.
15. ALL EXTERIOR PULL BOXES AND JUNCTION BOXES SHALL BE NEMA 4X.
16. ALL ELECTRICAL AND EXTERIOR CONNECTIONS SHALL BE WEATHERPROOF.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ANY EXISTING CONDUIT AND/OR JUNCTION BOXES TO BE USED ON THIS CONTRACT PRIOR TO PULLING NEW CABLE THROUGH. ANY DAMAGE TO NEW OR EXISTING CABLE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.

## LEGEND:

- CHANGEABLE MESSAGE SIGN
- EXISTING CONDUIT
- EXISTING CONDUIT WITH NEW CABLE
- NEW CONDUIT
- JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW CMS CABINET
- CONDUIT IN
- CONDUIT OUT
- X-Y LANE X TO LANE Y CABLES
- TERMINAL BLOCK
- FO NEW FIBER OPTIC CABLE
- EXISTING TRAFFIC SIGNAL INDICATOR
- QUAD RECEPTICAL
- DUPLEX RECEPTICAL
- S NEW INDICATOR LIGHT SWITCH CONSOLE PANEL
- RISER CONDUITS
- DROP CONDUITS
- NEW LED INDICATOR BOX
- NEW CMS WORKSTATION
- 2 NEW TYPE 2 EQUIPMENT RACK

## ABBREVIATIONS:

| | |
|---|---|
| AM | AMBER |
| BK | BLACK |
| BL | BLUE |
| BN | BROWN |
| C | CONDUIT |
| CAB | CABINET |
| CEC | CALIFORNIA ELECTRICAL CODE |
| CMS | CHANGEABLE MESSAGE SIGN |
| COMM | COMMUNICATIONS |
| CPB | COMMUNICATIONS PULL BOX |
| CKT | CIRCUIT |
| E | EXISTING |
| ETC | ELECTRONIC TOLL COLLECTION |
| FDU | FIBER DISTRIBUTION UNIT |
| FO | FIBER OPTIC |
| GFI | GROUND FAULT INTERRUPT |
| GN | GREEN |
| ILB | INDICATOR LIGHT BOOTH |
| ILC | INDICATOR LIGHT CANOPY |
| ILP | INDICATOR LIGHT PANEL |
| IT | INFORMATION TECHNOLOGY |
| J-BOX | JUNCTION BOX |
| JB | JUNCTION BOX |
| KVA | KILO-VOLT AMPERE |
| LCD | LIQUID CRYSTAL DISPLAY |
| LED | LIGHT EMITTING DIODE |
| MLO | MAIN LUG ONLY |
| NEC | NATIONAL ELECTRICAL CODE |
| N | NEUTRAL (GROUNDED CONDUCTOR) |
| ORT | OPEN ROAD TOLLING |
| PB | CEILING/WALL MOUNTED PULL BOX |
| PCC | PORTLAND CEMENT CONCRETE |
| PNL | PANEL |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| RMC | RIGID METAL CONDUIT |
| R# | RELAY (# = RELAY NUMBER) |
| RD | RED |
| SS | STAINLESS STEEL |
| TEES | TRANSPORTATION ELECTRICAL EQUIPMENT |
| SM | SINGLE MODE |
| TB | TERMINAL BLOCKS |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYPE A CABLE | 36 SINGLE MODE FIBER OPTIC CABLE |
| TYPE D CABLE | 12 SINGLE MODE FIBER OPTIC CABLE |
| TYPE 1 CONDUIT | GALVANIZED RIGID STEEL (GRS) |
| TYPE 2 CONDUIT | TYPE 1 CONDUIT COATED WITH PVC OR POLYETHYLENE |
| TYPE 4 CONDUIT | LIQUIDTIGHT FLEXIBLE METAL CONDUIT |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| XFMR | TRANSFORMER |
| YL | YELLOW |

## INDEX:



| REVISION NO. | DATE ISSUED | REMARKS |
|---|---|---|
| 2 | 3/26/10 | CMS EXPANSION, INDICATOR LIGHT CONTROL, CMS POWER |
| | | |
| | | |

## STANDARD NOTES:

- BC INSTALL PULL BOX IN EXISTING CONDUIT RUN.
- CB INSTALL CONDUIT INTO EXISTING PULL BOX.
- SC SPLICE NEW TO EXISTING CONDUCTORS.
- AB ABANDONED
- RD REMOVE AND DISPOSE
- RS REMOVE AND SALVAGE

## WIRING DIAGRAM LEGEND:

- CB CIRCUIT BREAKER
- NB NEUTRAL BUS
- GB GROUND BUS
- ENCLOSURE BOND
- GROUNDING ELECTRODE
- CIRCUIT BREAKER
- R RECEPTACLE

# GENERAL NOTES, LEGEND, ABBREVIATIONS AND INDEX OF DRAWINGS (ANTIOCH BRIDGE)

E-1

| SHEET | OF |
|---|---|
| 1 | 16 |

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RAMSEY J. HISSEN
No. C-39608
Exp. 12/31/10
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113

## PROJECT NOTES:

1. INSTALL NEW TYPE D CABLE IN EXISTING CONDUIT.
2. INSTALL NEW TYPE D CABLE.
3. INSTALL NEW TYPE 1 (¾" C) CONDUIT WITH (2) 2 #12 AND 1 #12G (120 V, CMS CABINET).
4. INSTALL ONE 15A, 1P, 120V CIRCUIT BREAKER FOR NEW CMS CABINET IN (E)SPACE #10.
5. INSTALL NEW THREE(3)15A-IP CIRCUIT BREAKERS (120 V, CMS SIGN) IN (E) SPACES 12,14, AND 16).
6. INSTALL TYPE 1 (1½" C) CONDUIT WITH 6 #12 AND 3 #12G (120 V, CMS SIGNS).
7. INSTALL TYPE 4 (1½" C) CONDUIT WITH 6 #12 AND 3 #12G (120 V, CMS SIGNS). ROUTE CONDUIT IN (E) CABLE TRAY TOGETHER WITH (E) POWER CABLES.
8. ROUTE TYPE 1 (1½" C) CONDUIT WITH 6 #12 AND 3 #12G TO (E) CANOPY (CORE DRILL IS REQUIRED). SEAL AROUND CONDUIT PENETRATION WITH FAST-SETTING EPOXY RESIN THROUGH THE DEPTH OF HOLE.
9. INSTALL NEW CAT-5e CABLE.
10. ALL WALL, CEILING AND FLOOR PENETRATIONS SHALL BE CORE-DRILLED AS DIRECTED AND APPROVED BY CALTRANS SUFFICIENTLY LARGE TO ACCOMMODATE CONDUIT PLUS FLUSH MOUNTED END BELL. ALL CORE-DRILLS SHALL BE MADE WATER-TIGHT, SEALED AROUND CONDUIT PER CALTRANS REQUIREMENTS WITH FAST-SETTING EPOXY RESIN THROUGHOUT THE DEPTH OF HOLE.
11. INSTALL NEW INDICATOR LIGHT CANOPY CABLE.
12. INSTALL NEW INDICATOR LIGHT BOOTH CABLE.
13. INSTALL NEW INDICATOR LIGHT CONSOLE CABLE.
14. INSTALL NEW CMS COMM CABLE.
15. INSTALL TYPE 3 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
16. INSTALL NEW TYPE 2 EQUIPMENT RACK. SEE SHEET E-3 AND SPECIFICATIONS FOR SIZE AND TYPE.
17. INSTALL NEW TYPE 4 (1½" C) CONDUIT.
18. INSTALL NEW FIBER OPTIC DUPLEX JUMPER CABLES.
19. INSTALL NEW FDU AS SPECIFIED IN CONTRACT DOCUMENT.
20. REMOVE AND DISPOSE OF EXISTING INDICATOR LIGHT CABLE.
21. INSTALL NEW CMS PANEL AS SPECIFIED IN CONTRACT DOCUMENTS.
22. INSTALL NEW CMS WORKSTATION AS SPECIFIED IN CONTRACT DOCUMENTS.
23. ROUTE NEW CABLES THROUGH EXISTING CONDUIT.
24. MODIFY EXISTING GREEN INDICATOR LIGHT AND REPLACE WITH GREEN/FLASHING AMBER LED INDICATOR BULB. REPLACE EXISTING RED INDICATOR LIGHT WITH RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.
25. INSTALL NEW TYPE 2 (1½" C) CONDUIT.
26. INSTALL NEW CMS PLAZA CABINET FOR LANES 1-3 AS SPECIFIED IN CONTRACT DOCUMENTS.
27. ROUTE NEW CMS COMM CABLE THROUGH EXISTING JUNCTION BOX.
28. NOT USED
29. INSTALL INDICATOR LIGHT SWITCH CONSOLE PANEL.
30. REMOVE EXISTING INDICATOR LIGHT SWITCH IN TOLL BOOTH.
31. INSTALL NEW CMS CONTROLLERS. ROUTE CAT-5E PATCH CABLES FROM EACH CMS CONTROLLER TO NEW ETHERNET SWITCH IN EXISTING CMS CABINET.
32. INSTALL NEW TYPE 1 (2" C) CONDUIT.
33. INSTALL NEW TYPE 2 (2" C) CONDUIT.
34. INSTALL TYPE 1 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
35. INSTALL NEW TYPE 1 (1½" C) CONDUIT.
36. INSTALL NEW 4"X4"X4" JUNCTION BOX
37. INSTALL INDICATOR LIGHT RELAYS AND TYPE 2 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
38. INSTALL NEW TYPE 4 (2" C) CONDUIT
39. INSTALL AND TERMINATE INDICATOR LIGHT CABLES TO NEW TERMINAL BLOCKS AND WIRE TO SWITCH PANEL AS SHOWN IN PLANS AND APPROVED BY THE ENGINEER.
40. INSTALL LB FITTING.
41. INSTALL NEW LED PUSH BUTTON INDICATOR BOX.
42. PROVIDE NEW REVISED (TYPED WRITTEN) PANEL SCHEDULE.
43. INSTALL NEW TYPE 4 (1½" C) CONDUIT.

# PROJECT NOTES (ANTIOCH BRIDGE)

E-2

| SHEET | OF |
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| 2 | 16 |

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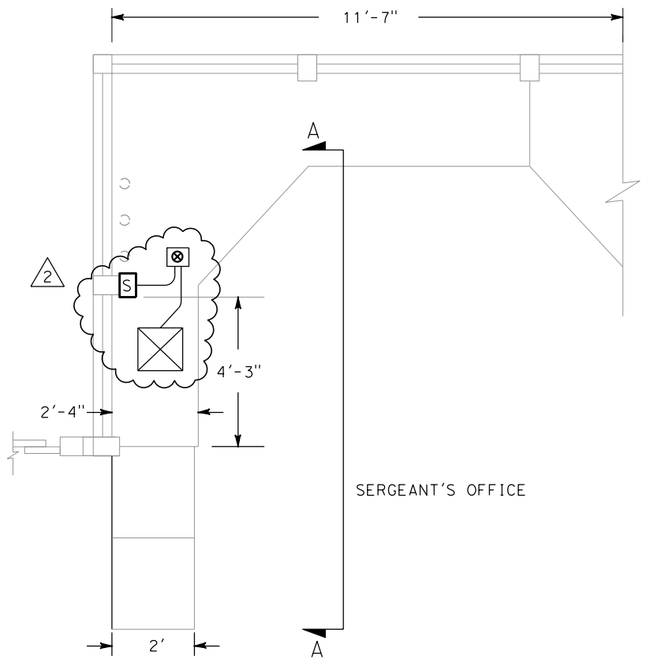
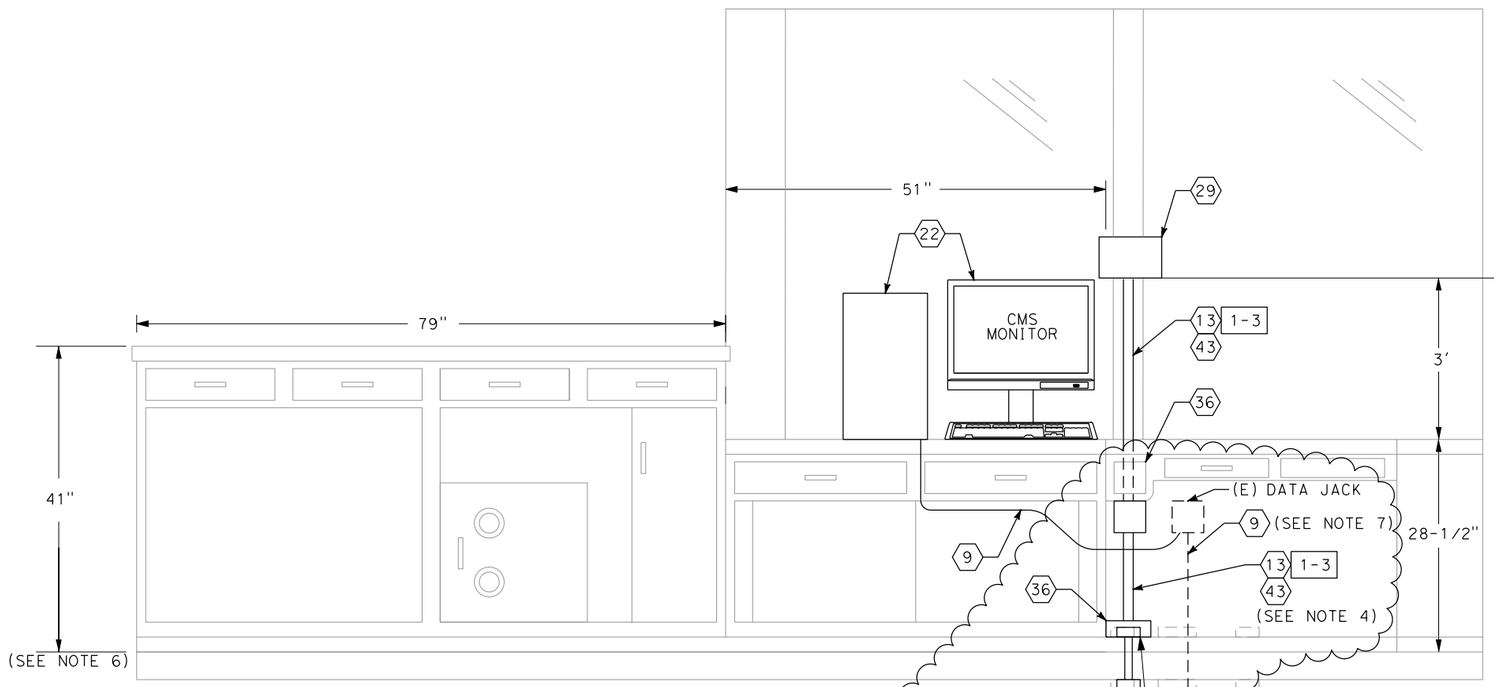
SAN JOSE, CA 95113

## SHEET NOTES:

1. ANY EXISTING FURNITURE REQUIRED TO BE RE-ARRANGED FOR PLACEMENT OF CMS WORKSTATION AND INDICATOR LIGHT SWITCH CONSOLE PANEL SHALL BE COORDINATED WITH TOLL SERGEANT.
2. INDICATOR LIGHT SWITCH CONSOLE PANEL TO BE MOUNTED VERTICALLY TO EXISTING COLUMN.
3. SEE SHEET E-8 FOR CMS SYSTEM CONTROL SCHEMATIC AND SHEET E-12 FOR INDICATOR LIGHT SWITCH CONSOLE PANEL.
4. CONTRACTOR TO ROUTE ALL CABLES TO CMS WORKSTATION AND INDICATOR LIGHT SWITCH CONSOLE PANEL. SECURE ALL CONDUIT TO WALL WITH FITTINGS AND FASTENERS.
5. CONTRACTOR TO INSTALL CABLE SUPPORT SYSTEM TO NEATLY DRESS AND SECURE CABLE TO EQUIPMENT RACK.
6. CONTRACTOR TO ROUTE NEW CONDUIT UNDER BUILDING USING EXISTING CONDUIT SUPPORT SYSTEM.
7. CONTRACTOR TO PULL NEW CABLE THROUGH EXISTING 1"C AND PROVIDE A PULL STRING. (2)




MAIN FLOOR - PARTIAL FLOOR PLAN VIEW




CMS WORKSTATION DETAIL
SECTION A-A

# TOLL PLAZA OPERATIONS BUILDING
# PARTIAL MAIN FLOOR PLAN
# CONDUIT ROUTING
# (ANTIOCH BRIDGE)

NO SCALE

E-3

| SHEET | OF |
|---|---|
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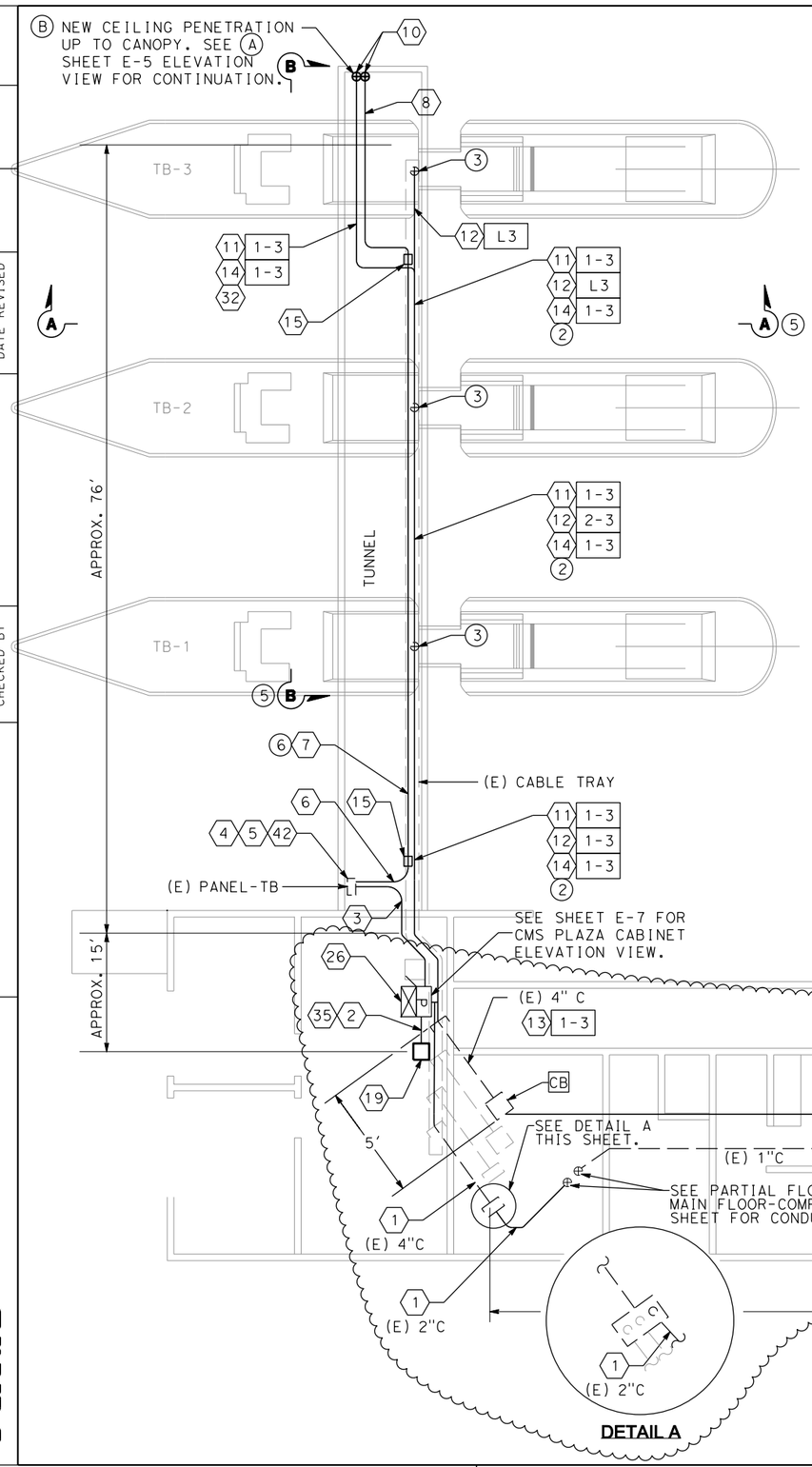
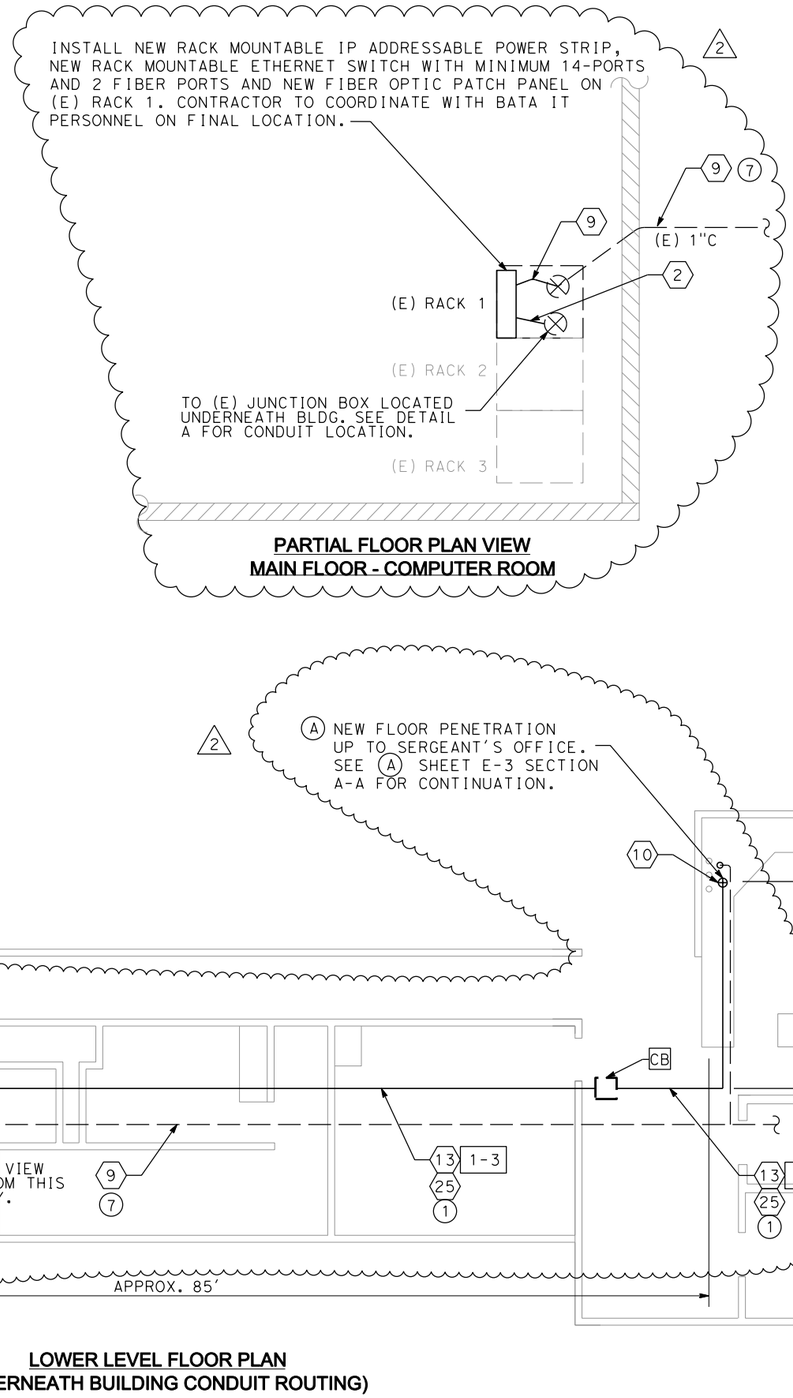



DETAIL A

LOWER LEVEL FLOOR PLAN
(UNDERNEATH BUILDING CONDUIT ROUTING)




PARTIAL FLOOR PLAN VIEW
MAIN FLOOR - COMPUTER ROOM




NOTES:

1. CONTRACTOR TO ROUTE NEW CONDUIT UNDER BUILDING USING EXISTING CONDUIT SUPPORT SYSTEM.
2. ROUTE CMS COMM AND INDICATOR LIGHT CABLES ON EXISTING CABLE TRAY TOGETHER WITH EXISTING COMMUNICATION CABLES.
3. ROUTE NEW INDICATOR LIGHT BOOTH CABLE UP THROUGH EXISTING CONDUIT. SEE SHEET E-6 SECTION B-B FOR MORE DETAILS.
4. ROUTE POWER CABLES ON EXISTING CABLE TRAY TOGETHER WITH EXISTING POWER CABLES.
5. SEE CONDUIT ROUTING DETAILS SHEET E-6 FOR SECTION A-A AND B-B DETAILS.
6. TRANSITION FROM TYPE 1 TO TYPE 4 CONDUIT. PROVIDE ALL CONDUIT FITTINGS AND FASTENERS TO SECURE CONDUIT ON CABLE TRAY.
7. CONTRACTOR TO PULL NEW CABLE THROUGH EXISTING 1"C AND PROVIDE A PULL STRING.
8. CONTRACTOR TO INSTALL CABLE SUPPORT SYSTEM TO NEATLY DRESS AND SECURE CABLE TO EQUIPMENT RACK.

# TOLL PLAZA OPERATIONS BUILDING LOWER LEVEL CONDUIT ROUTING (ANTIOCH BRIDGE)

NO SCALE

E-4

| SHEET | OF |
|---|---|
| 4 | 16 |

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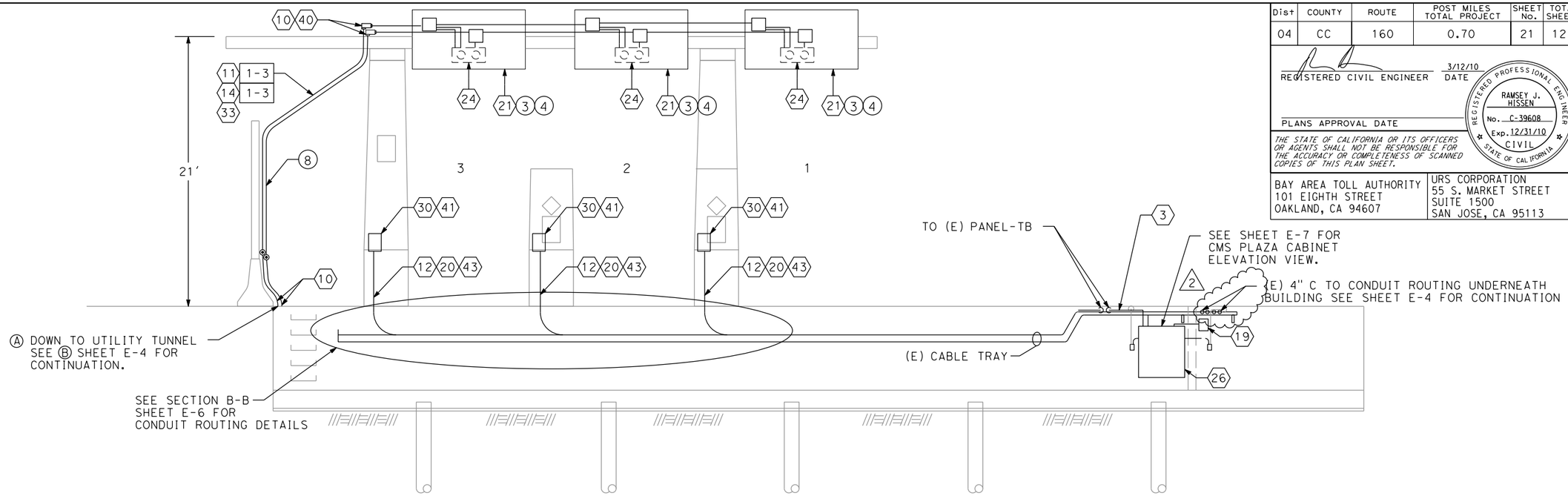
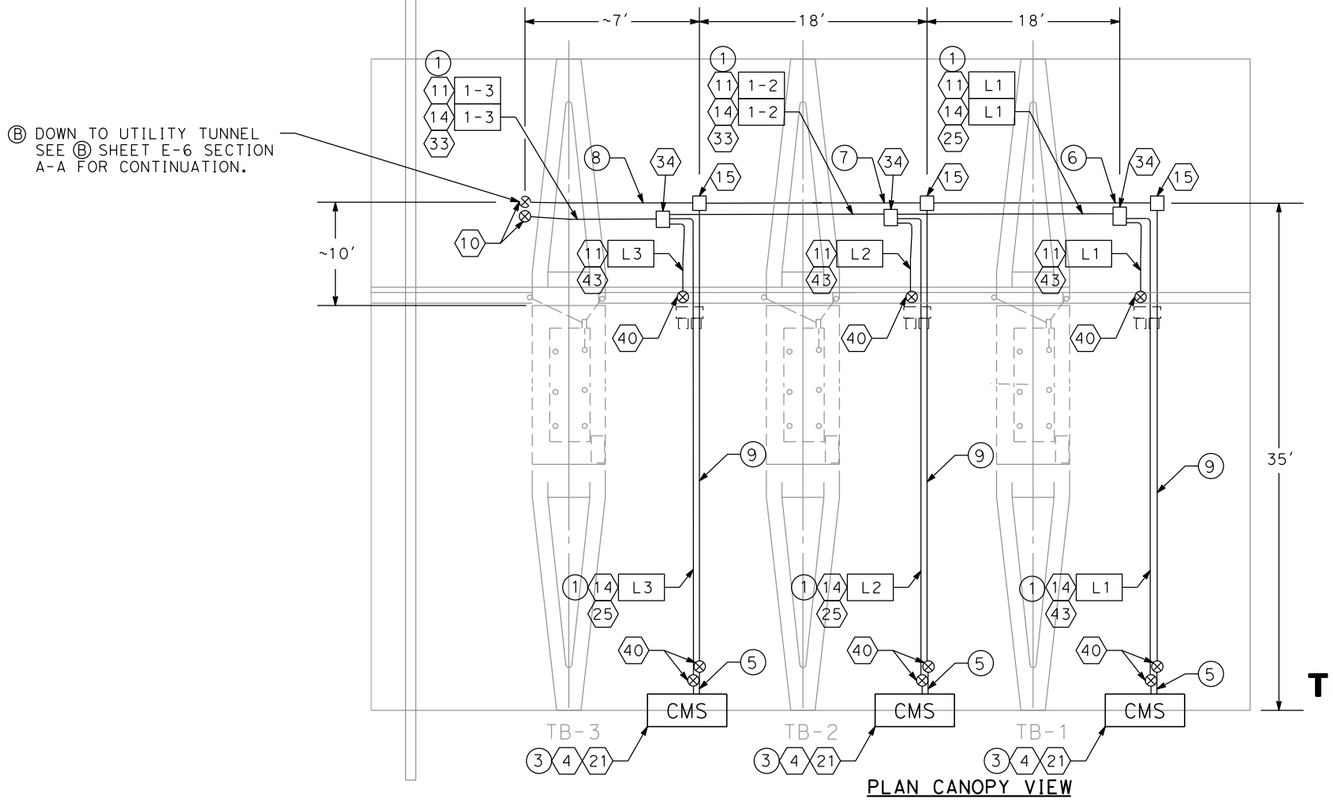



## ELEVATION VIEW




## PLAN CANOPY VIEW

### NOTES:

1. CONTRACTOR TO PROVIDE CONDUIT SUPPORT.
2. FINAL LOCATION OF CONDUIT AND JUNCTION BOX ROUTING AND ATTACHMENT DETAILS SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER PRIOR TO INSTALLATION.
3. REMOVE AND SALVAGE EXISTING STATIC SIGNS IN LANES 1-3 AND INSTALL NEW CMS PANELS.
4. SEE S-1, S-2, AND S-3 SHEETS FOR CMS PANEL MOUNTING TO CANOPY DETAILS.
5. INSTALL TYPE 4 (1" C) CONDUIT WITH 2 #12 & 1 #12G (120V, CMS SIGN POWER).
6. INSTALL TYPE 2 (1½" C) CONDUIT WITH 2 #12 & 1 #12G (120V, CMS SIGN POWER).
7. INSTALL TYPE 2 (1½" C) CONDUIT WITH 4 #12 & 2 #12G (120V, CMS SIGN POWER).
8. INSTALL TYPE 2 (1½" C) CONDUIT WITH 6 #12 & 3 #12G (120V, CMS SIGN POWER).
9. INSTALL TYPE 2 (1" C) CONDUIT WITH 2 #12 & 1 #12G (120V, CMS SIGN POWER). PROVIDE CONDUIT SUPPORT EVERY 5 FEET (MAX).

# TOLL PLAZA OPERATIONS BUILDING TUNNEL TO CONOPY CONDUIT ROUTING (ANTIOCH BRIDGE)

NO SCALE

**E-5**

| SHEET | OF |
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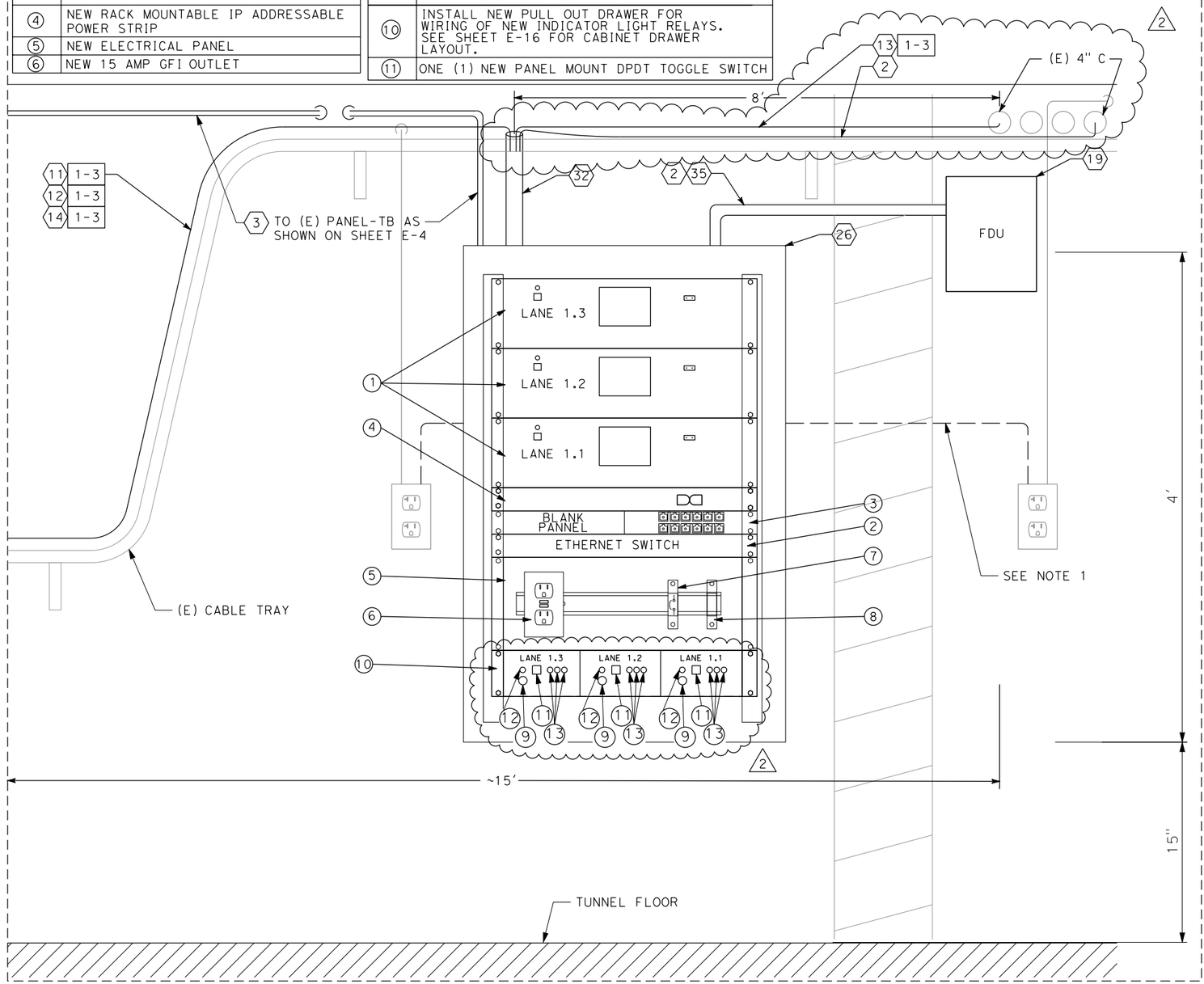
| ITEM | COMPONENT |
|---|---|
| 1 | NEW CMS CONTROLLER |
| 2 | NEW 14-PORT + 2 FIBER PORT ETHERNET SWITCH (RACK MOUNTED) |
| 3 | NEW 12-PORT FIBER PATCH (CONNECTOR) PANEL (X2) |
| 4 | NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP |
| 5 | NEW ELECTRICAL PANEL |
| 6 | NEW 15 AMP GFI OUTLET |

| ITEM | COMPONENT |
|---|---|
| 7 | ONE (1) NEW 2 AMP BREAKER (120 VAC) |
| 8 | ONE (1) NEW NEC CLASS 3, 100 WATT 1:1, 120 VAC TRANSFORMER |
| 9 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 10 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. SEE SHEET E-16 FOR CABINET DRAWER LAYOUT. |
| 11 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |

| ITEM | COMPONENT |
|---|---|
| 12 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 13 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |




CMS PLAZA CABINET ELEVATION

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PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp.12/31/10 — CIVIL — STATE OF CALIFORNIA

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BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
OAKLAND, CA 94607

URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113

## SHEET NOTES:

1. EXISTING CONDUIT TO BE RE-ROUTED FOR PLACEMENT OF CMS PLAZA CABINET. CONTRACTOR SHALL COORDINATE WITH LIEUTENANT.
2. ALL CABLING IN CMS CABINETS SHALL BE INSTALLED AND NEATLY DRESSED AND SECURED IN CABINETS. SPARE COILED CABLING SHALL BE PROVIDED IN JUNCTION BOXES.
3. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS (I.E., TRANSFORMERS, BREAKERS, ETC.).
4. ALL CMS CABINET EQUIPMENT AND CONDUIT LOCATIONS SHOWN ON PLANS AND DETAILS ARE APPROXIMATE. FINAL LOCATION OF ALL EQUIPMENT AND MATERIALS SHALL BE AS DIRECTED AND APPROVED BY THE ENGINEER.
5. CMS CABINET MOUNTED TO A CONCRETE WALL SHALL BE ATTACHED TO THE WALL USING ⅜" DIAMETER EXPANSION ANCHORS, TOTAL 4 PER CABINET ATTACHED TO THE CONCRETE WALL. CONTRACTOR MAY PROPOSE AN ALTERNATIVE MOUNTING METHOD (I.E., MOUNTING RAILS) FOR APPROVAL BY ENGINEER.
6. CABINET AND EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS.
7. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.
8. CONTRACTOR TO LEAVE ONE (1) RACK UNIT OF SPACE AT BOTTOM OF CABINET.

# CMS PLAZA CABINET ELEVATION VIEW FOR LANES 1-3 (ANTIOCH BRIDGE)

NO SCALE

E-7

| SHEET | OF |
|---|---|
| 7 | 16 |

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CALCULATED-DESIGNED BY | CHECKED BY
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| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 160 | 0.70 | 24 | 123 |

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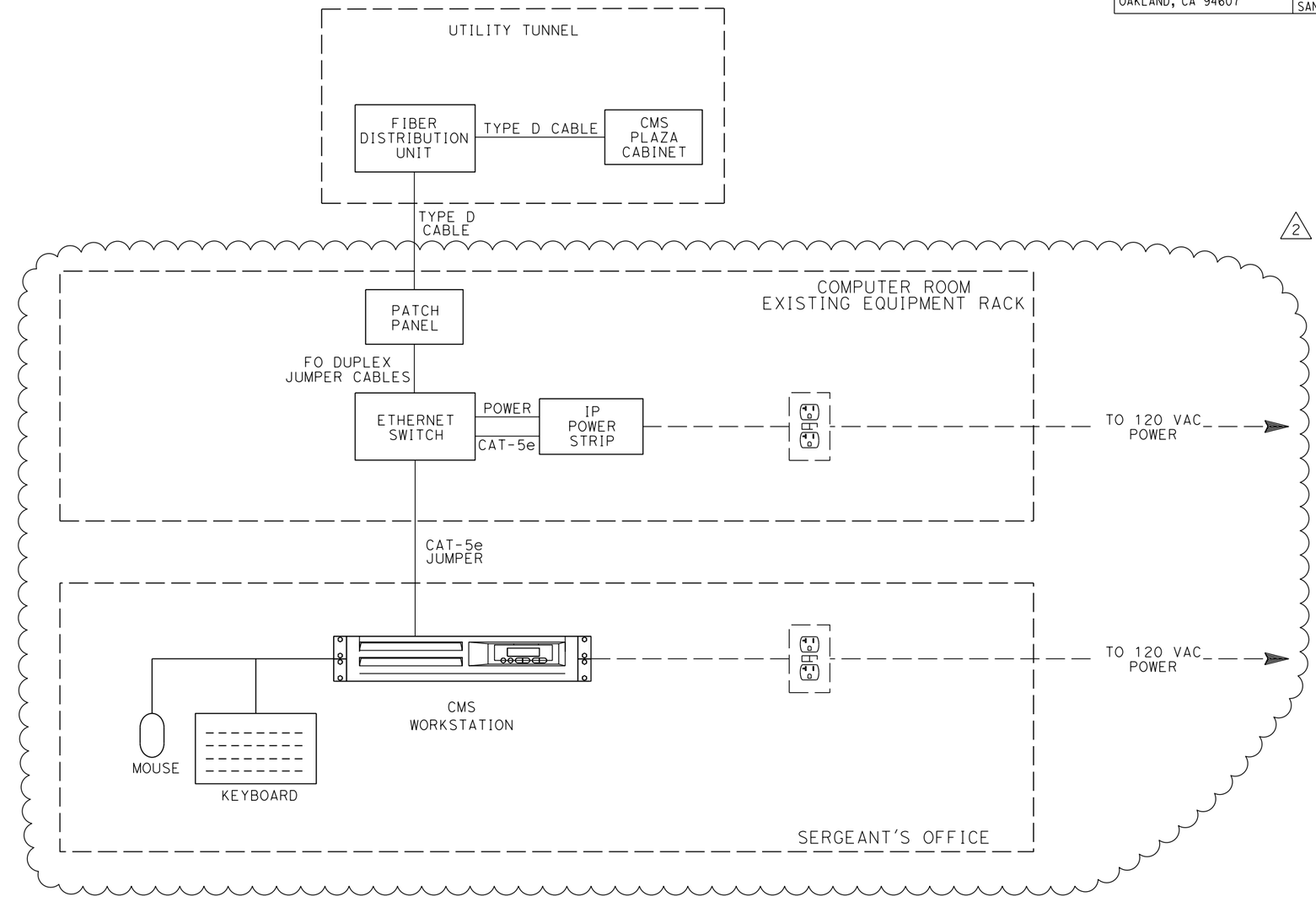
NOTES:

1. SEE SHEETS E-9 TO E-10 FOR SPLICING AND INTERCONNECTION DETAILS.
2. SEE CMS WORKSTATION DETAIL SHEET E-3.
3. SEE SHEET E-7 FOR CMS PLAZA CABINET ELEVATION VIEW.




TOLL PLAZA OPERATIONS BUILDING

# CMS SYSTEM CENTRAL CONTROL SCHEMATIC (ANTIOCH BRIDGE)

NO SCALE

E-8

| SHEET | OF |
|---|---|
| 8 | 16 |

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| REVISED BY | DATE REVISED |
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|---|---|---|---|---|---|
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## TYPE D CABLE TO CMS PLAZA CABINET

| FIBER No. | PLAZA PATCH PANEL | PLAZA CABINET | | | FIBER No. | REMARKS |
|---|---|---|---|---|---|---|
| 1-2 | O> | | | <O | 1-2 | FUTURE |
| 3 | X> | <X> | <X> | <X | 3 | ETHERNET TX PRIMARY |
| 4 | X> | <X> | <X> | <X | 4 | ETHERNET RX PRIMARY |
| 5-12 | O> | <O> | <O> | <O | 5-12 | FUTURE |

## TYPE D CABLE TO CMS WORKSTATION

| FIBER No. | PLAZA PATCH PANEL | PLAZA CABINET | | | FIBER No. | REMARKS |
|---|---|---|---|---|---|---|
| 1-2 | O> | | | <O | 1-2 | FUTURE |
| 3 | X> | <X> | <X> | <X | 3 | ETHERNET TX PRIMARY |
| 4 | X> | <X> | <X> | <X | 4 | ETHERNET RX PRIMARY |
| 5-12 | O> | <O> | <O> | <O | 5-12 | FUTURE |

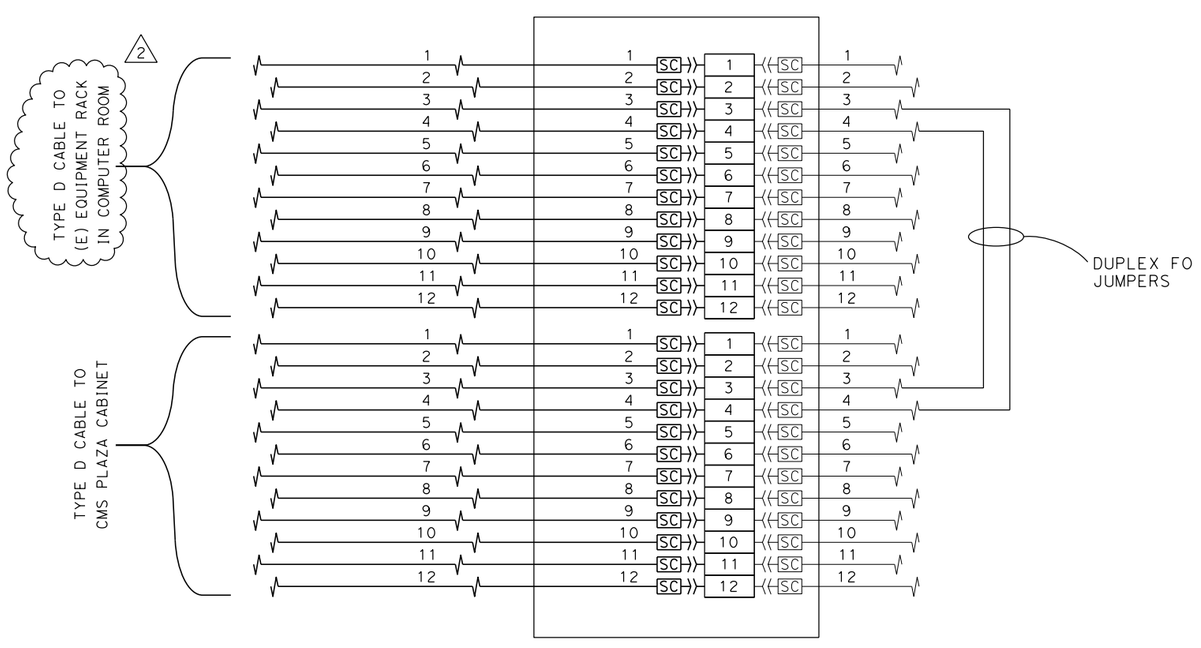
NOTES:

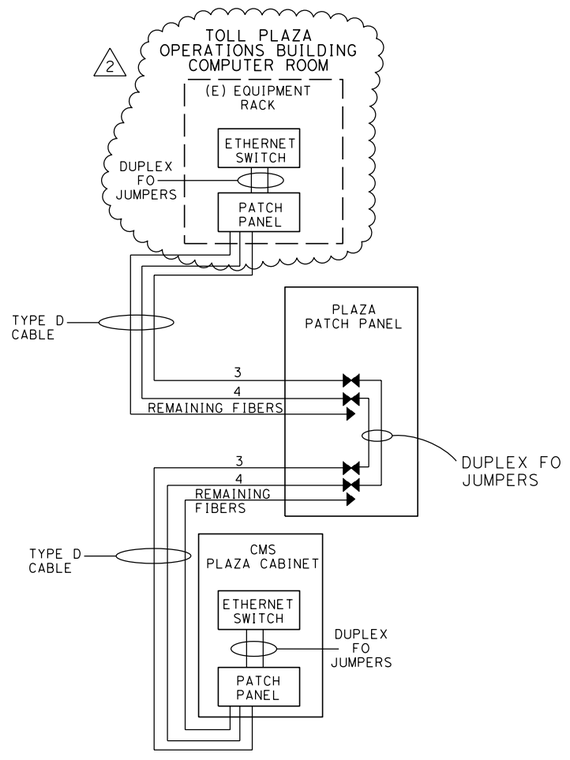
X - TERMINATED ACTIVE

O - TERMINATED SPARE

< > - ARROW POINTS TO THE DIRECTION OF TRANSMISSION

▶ - TERMINATED FIBERS (SC CONNECTOR)




# TYPE D CABLE FIBER ASSIGNMENT (ANTIOCH BRIDGE)

NO SCALE

E-10

| SHEET | OF |
|---|---|
| 10 | 16 |

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Carol Light
REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CAROL LIGHT No. 10145 Exp. 09/30/11 ELECTRICAL — STATE OF CALIFORNIA

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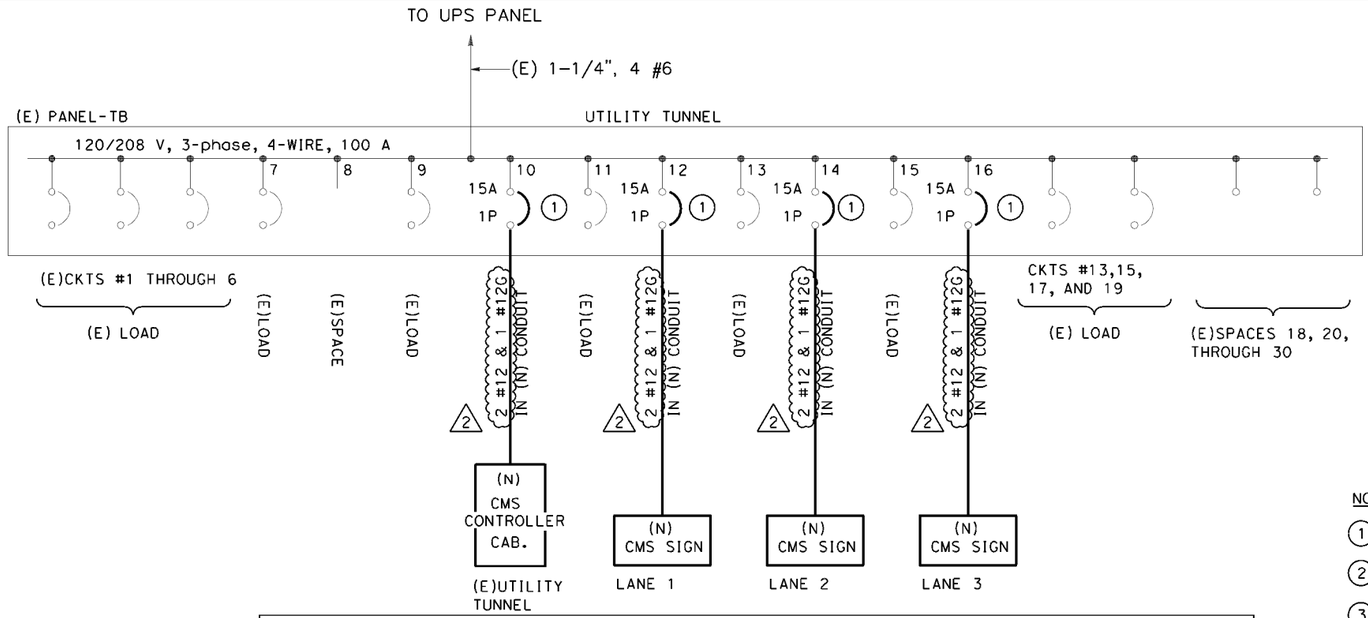


NOTES:

1. INSTALL NEW CIRCUIT BREAKER IN EXISTING SPACE.
2. CONTRACTOR TO UPDATE BREAKER PANEL BOARD SCHEDULE AND PROVIDE A NEW TYPED WRITTEN PANEL BOARD SCHEDULE.
3. THE CMS CABINET AND SIGNS SHALL BE CONNECTED TO THE BUILDING GROUNDING SYSTEM BY THE EQUIPMENT GROUND CONDUCTOR IN EACH CONDUIT.
4. ALL METAL PARTS OF THE ELECTRICAL SYSTEM SHALL BE BONDED TOGETHER PER CONTRACT SPECIFICATIONS.

PROJECT: BATA TO12 TOLL PLAZAS CMS INITIALIZATION

## (E) PANEL- TB

LOCATION: ANTIOCH BRIDGE
SERVICE: UTILITY TUNNEL

| LOAD DESCRIPTION | LTG. | G.P. REC | OTH. | CB AMP | CB POLE | | | | CB AMP | CB POLE | LTG. | G.P. REC | OTH. | LOAD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (E) LANE 1- BOOTH EQPT | | | | 20 | 1 | 1 | A | 2 | 20 | 1 | | | | (E) CAMERA LANE 1 |
| (E) LANE 1- ENT. LT. CURTAIN | | | | 20 | 1 | 3 | B | 4 | 20 | 1 | | | | (E) CAMERA LANE 2 |
| (E) LANE 1- ENT. LT. CURTAIN | | | | 20 | 1 | 5 | C | 6 | 20 | 1 | | | | (E) CAMERA LANE 3 |
| (E) LANE 2- BOOTH EQPT | | | | 20 | 1 | 7 | A | 8 | 20 | 1 | | | | (E) SPACE |
| (E) LANE 2- ENTRANCE LT. CURTAIN | | | | 20 | 1 | 9 | B | 10 | 15 | 1 | | | 0.60 | (N) CMS CABINET- TUNNEL |
| (E) LANE 2- EXIT LT. CURTAIN | | | | 20 | 1 | 11 | C | 12 | 15 | 1 | | | 0.50 | (N) CMS SIGN- LANE 1 |
| (E) LANE 3- BOOTH EQPT | | | | 20 | 1 | 13 | A | 14 | 15 | 1 | | | 0.50 | (N) CMS SIGN- LANE 2 |
| (E) LANE 3- ENTRANCE LT. CURTAIN | | | | 20 | 1 | 15 | B | 16 | 15 | 1 | | | 0.50 | (N) CMS SIGN- LANE 3 |
| (E) LANE 3- EXIT LT. CURTAIN | | | | 20 | 1 | 17 | C | 18 | | 1 | | | | (E) SPACE |
| (E) LIGHT SENSORS ON LANE 2 | | | | 20 | 1 | 19 | A | 20 | | 1 | | | | (E) SPACE |
| (E) SPACE | | | | | 1 | 21 | B | 22 | | 1 | | | | (E) SPACE |
| (E) SPACE | | | | | 1 | 23 | C | 24 | | 1 | | | | (E) SPACE |
| (E) SPACE | | | | | 1 | 25 | A | 26 | | 1 | | | | (E) SPACE |
| (E) SPACE | | | | | 1 | 27 | B | 28 | | 1 | | | | (E) SPACE |
| (E) SPACE | | | | | 1 | 29 | C | 30 | | 1 | | | | (E) SPACE |
| TOTALS SECTION 1 | 0.00 | 0.00 | 0.00 | | | | | | | | 0.00 | 0.00 | 2.10 | |

VOLTAGE: 120/208V
PHASE/WIRE: 3 PHASE / 4 WIRE
RATING: 100A
MAINS: MAIN LUG ONLY
MOUNTING: SURFACE
A.I.C.:
BUS SIZE:

LOAD SUMMARY

| | CONNECT LOAD | DEMAND FACTOR | DEMAND LOAD |
|---|---|---|---|
| | 0.00 | 125% OF LOAD | 0.00 |
| | 0.00 | NEC 220-13 | 0.00 |
| | 2.10 | 1.00 | 2.10 |
| | 2.10 KVA | | 2.10 KVA |
| | 5.8 AMPS | | 5.8 AMPS |

| BALANCE: | (KVA) | % | AMPS: |
|---|---|---|---|
| PHASE A: | 0.50 | 23.81 | 1.39 |
| PHASE B: | 1.10 | 52.38 | 3.06 |
| PHASE C: | 0.50 | 23.81 | 1.39 |

ADDITIONAL FEATURES:

S&L JOB #:

# PARTIAL ONE LINE DIAGRAM AND PANEL SCHEDULE (ANTIOCH BRIDGE)

NO SCALE

E-11

| SHEET | OF |
|---|---|
| 11 | 16 |

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|---|---|---|---|---|---|
| 04 | CC | 160 | 0.70 | 29 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

RAMSEY J. HISSEN No. C-39608 Exp. 12/31/10 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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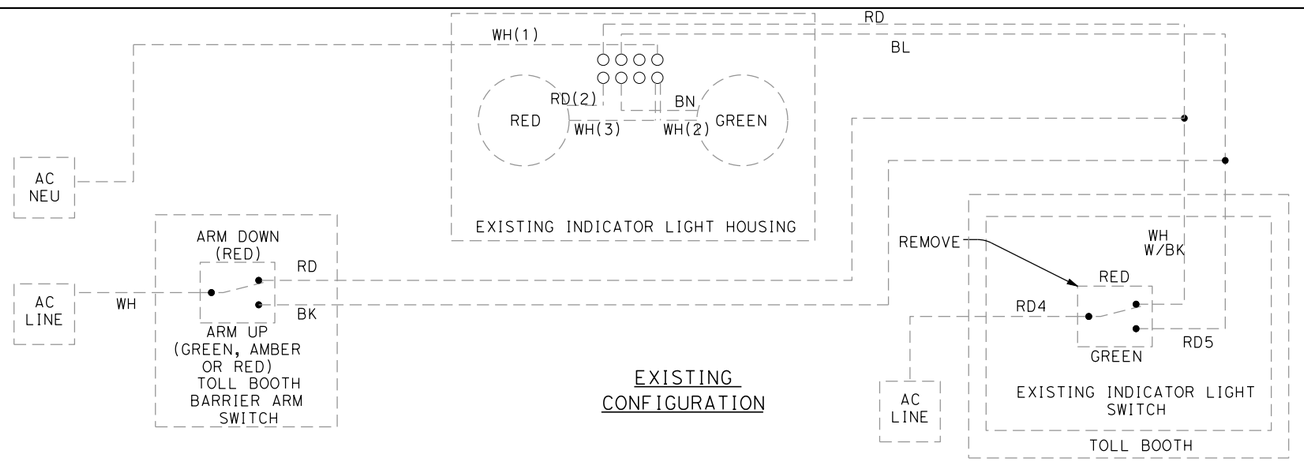
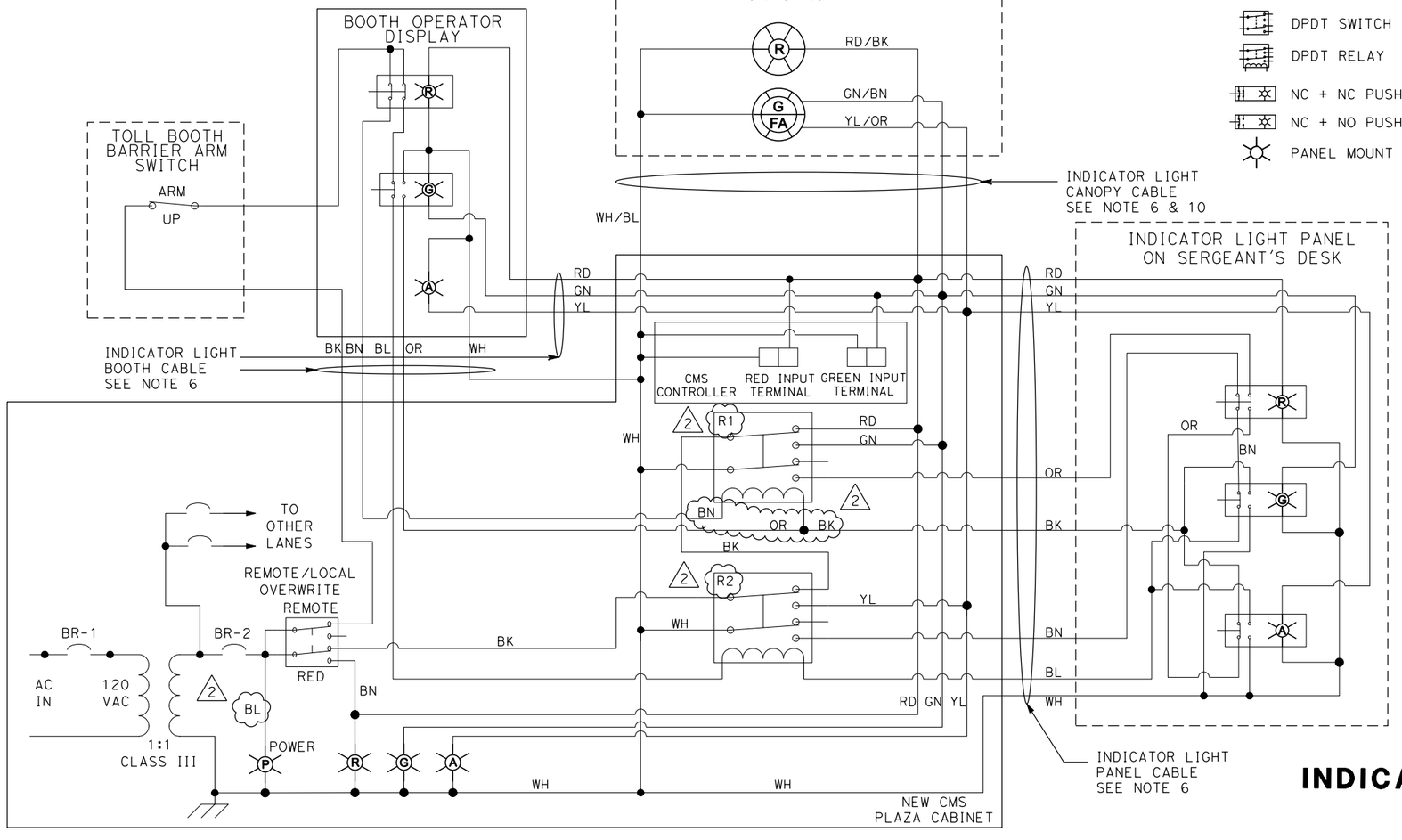



EXISTING CONFIGURATION

## LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- CMS CABINET TERMINAL BLOCK X-B
  X = LANE NUMBER
  B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 7)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)




PROPOSED CONFIGURATION

## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-12 FOR INDICATOR LIGHT SWITCH CONSOLE PANEL DETAIL.
3. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
4. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
5. BELDEN 5506UE OR APPROVED EQUIVALENT.
6. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
7. ONE (1) ½ AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) ½ AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
8. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 INDICATOR LIGHT CONTROL LANES.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 1-3 (ANTIOCH BRIDGE)

NO SCALE

E-13

| SHEET | OF |
|---|---|
| 13 | 16 |

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| ITEM | COMPONENT |
|---|---|
| 1 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 2 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| 3 | 6 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT CANOPY CABLE AND POWER |
| 4 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 5 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. |
| 6 | TWO (2) NEW DPDT RELAYS |
| 7 | DRILLED HOLES AT BOTTOM OF DRAWER FOR INDICATOR LIGHT CABLES WITH RUBBER GROMMETS. |
| 8 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 9 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT BOOTH CABLE |
| 10 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT PANEL CABLE |

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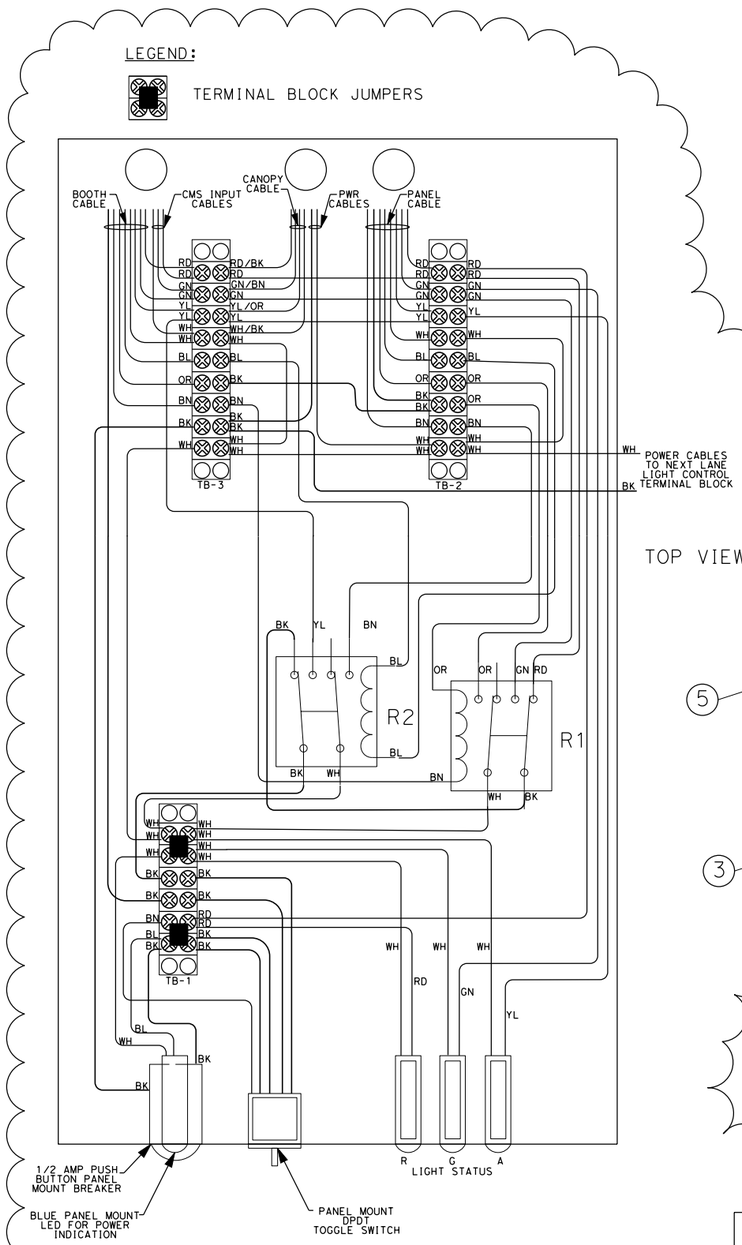
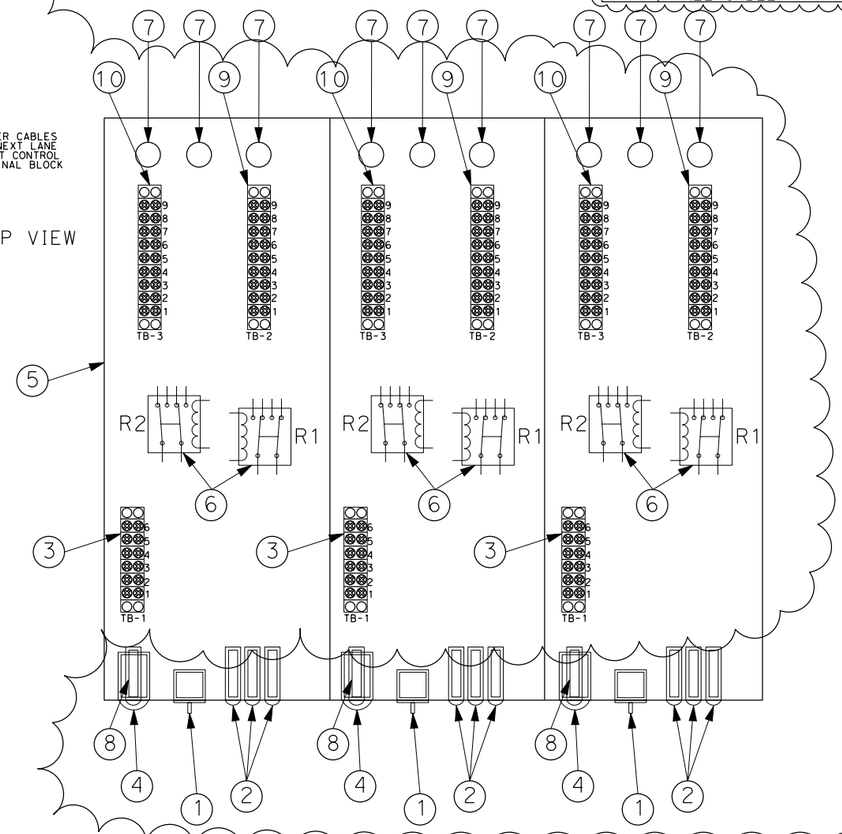
LEGEND:

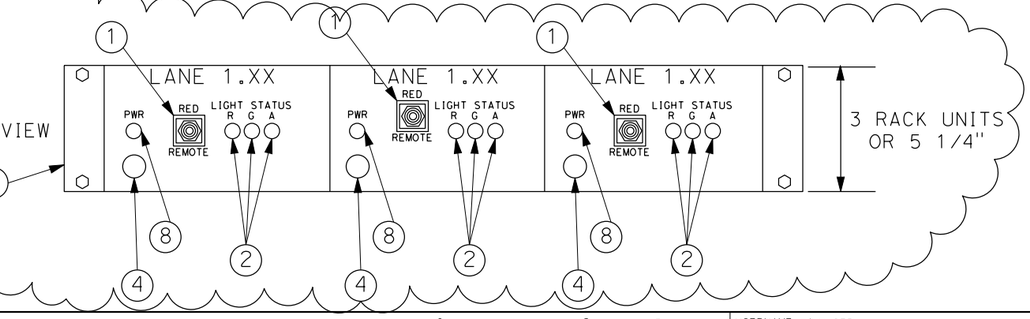
TERMINAL BLOCK JUMPERS




TOP VIEW




FRONT VIEW




NOTES:

1. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
2. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
3. INDICATOR LIGHT CABLES TO BE WIRED ACCORDING TO THE INDICATOR LIGHT WIRING DIAGRAM AS SHOWN ON SHEETS E-13.
4. INDICATOR LIGHT DRAWER LAYOUT SHOWN FOR TYPICAL CMS CABINET.
5. ROUTE ALL CABLES THROUGH DRILLED HOLES AT BOTTOM OF DRAWER. INCLUDE PLASTIC GROMMETS IN HOLE.
6. TERMINATE ALL CABLES ON NEW TERMINATION BLOCKS.
7. FASTEN ALL CABLES TO DRAWER TO PREVENT STRAINING ON TERMINATION BLOCKS.
8. EACH CABINET DRAWER SHALL BE DESIGNED TO ACCOMMODATE UP TO FOUR (4) INDICATOR CONTROL LANES.
9. CONTRACTOR TO LEAVE AT LEAST ONE RACK UNIT OF SPACE BETWEEN DRAWER AND BOTTOM OF CABINET.
10. USE TERMINAL LUGS FOR ALL CABLE CONNECTIONS TO TERMINAL BLOCKS.

# INDICATOR LIGHT CABINET DRAWER LAYOUT (ANTIOCH BRIDGE)

NO SCALE

E-16

| SHEET | OF |
|---|---|
| 16 | 16 |

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## GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST VERSION OF THE CALTRANS STANDARD PLAN AND SPECIFICATIONS.
2. CALL UNDERGROUND SERVICE ALERT 48 HOURS BEFORE EXCAVATION U.S.A. (800) 277-2600.
3. ALL ELECTRICAL AND CMS EQUIPMENT, INFRASTRUCTURE, LANDSCAPING OR BUILDINGS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL ELECTRICAL AND CMS EQUIPMENT INCLUDING CONDUITS, JUNCTION AND SPLICE EQUIPMENT RACK ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
5. SERVICE EQUIPMENT, AND CMS CABINET ENCLOSURES, CONTROLLER ASSEMBLIES, CMS AND OTHER ELECTRICAL EQUIPMENT ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATION SHALL BE DETERMINED TO SUIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
6. ALL EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHOWN ON THE PLANS IS FOR REFERENCE AND SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. LOCATIONS ARE APPROXIMATED. ANY DAMAGE TO THE EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.
7. NEW CIRCUIT BREAKERS TO BE INSTALLED TO EXISTING PANEL BOXES SHALL MATCH THE EXISTING TYPE OR APPROVED BY THE ENGINEER AS REQUIRED.
8. ALL DIMENSIONS INDICATED ARE TO BE VERIFIED IN FIELD PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR SHALL IDENTITY AND VERIFY ALL EXISTING UTILITIES, POWER SOURCES AND POWER CONSUMPTIONS AS REQUIRED OR NEEDED AS SHOWN ON THE PLANS PRIOR TO COMMENCING WORK.
10. SEE STRUCTURAL PLANS FOR EXACT LOCATION OF CMS STRUCTURES, FRAMES AND MOUNTING BRACKETS.
11. ALL ABOVE GROUND CONDUIT SHALL BE SUPPORTED AT A MINIMUM OF EVERY 5 FEET.
12. ALL ELECTRICAL ITEMS THAT USE ANCHORS TO ATTACH TO THE CONCRETE STRUCTURES SHALL USE STAINLESS STEEL POWER STUD ANCHORS-THREADED VERSION SIZED PER MANUFACTURER RECOMMENDATION AND EPOXY ANCHOR HOLES USING SEALANT WITH A RATED LIFE OF 25 YEARS OR GREATER.
13. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE NEC & NATIONAL ELECTRICAL SAFETY CODE. ALL COMPONENTS SHALL BE PROPERLY GROUNDED AND BONDED PER NEC REQUIREMENTS. ALL COMPONENTS INCLUDING CONDUITS JUNCTION BOXES, CABLING, EQUIPMENT, AND CABINETS SHALL BE CLEARLY LABELED WITH PROPER TAGS, NAME PLATES, AND I.D. LABELS.
14. CONTRACTOR SHALL USE TYPE 1 CONDUIT IN TUNNEL AND TRENCH, TYPE 2 CONDUIT FOR EXPOSED CONDITIONS AND TYPE 4 FLEXIBLE CONDUIT AS SHOWN ON PLANS.
15. ALL EXTERIOR PULL BOXES AND JUNCTION BOXES SHALL BE NEMA 4X.
16. ALL ELECTRICAL AND EXTERIOR CONNECTIONS SHALL BE WEATHERPROOF.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ANY EXISTING CONDUIT AND/OR JUNCTION BOXES TO BE USED ON THIS CONTRACT PRIOR TO PULLING NEW CABLE THROUGH. ANY DAMAGE TO NEW OR EXISTING CABLE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.

## LEGEND:

- CHANGEABLE MESSAGE SIGN
- EXISTING CONDUIT
- EXISTING CONDUIT WITH NEW CABLE
- NEW CONDUIT
- JUNCTION BOX
- EXISTING JUNCTION BOX
- P# EXISTING PLAZA CABINET
- CONDUIT IN
- CONDUIT OUT
- S EXISTING INDICATOR LIGHT SWITCH PANEL
- X-Y LANE X TO LANE Y CABLES
- TERMINAL BLOCK
- fo EXISTING FIBER OPTIC CABLE
- EXISTING TRAFFIC SIGNAL INDICATOR
- QUAD RECEPTICAL
- DUPLEX RECEPTICAL
- # NEW EQUIPMENT RACK # = RACK TYPE
- EXISTING CMS WORKSTATION
- S NEW INDICATOR LIGHT SWITCH CONSOLE PANEL
- RISER CONDUITS
- DROP CONDUITS
- NEW LED INDICATOR BOX

## ABBREVIATIONS:

| | |
|---|---|
| AM | AMBER |
| BK | BLACK |
| BL | BLUE |
| BN | BROWN |
| C | CONDUIT |
| CAB | CABINET |
| CEC | CALIFORNIA ELECTRICAL CODE |
| CMS | CHANGEABLE MESSAGE SIGN |
| COMM | COMMUNICATIONS |
| CPB | COMMUNICATIONS PULL BOX |
| CKT | CIRCUIT |
| E | EXISTING |
| ETC | ELECTRONIC TOLL COLLECTION |
| FDU | FIBER DISTRIBUTION UNIT |
| FO | FIBER OPTIC |
| GFI | GROUND FAULT INTERRUPT |
| GN | GREEN |
| ILB | INDICATOR LIGHT BOOTH |
| ILC | INDICATOR LIGHT CANOPY |
| ILP | INDICATOR LIGHT PANEL |
| J-BOX | JUNCTION BOX |
| JB | JUNCTION BOX |
| KVA | KILO-VOLT AMPERE |
| LCD | LIQUID CRYSTAL DISPLAY |
| LED | LIGHT EMITTING DIODE |
| MLO | MAIN LUG ONLY |
| NEC | NATIONAL ELECTRICAL CODE |
| N | NEUTRAL (GROUNDED CONDUCTOR) |
| ORT | OPEN ROAD TOLLING |
| PB | CEILING/WALL MOUNTED PULL BOX |
| PCC | PORTLAND CEMENT CONCRETE |
| PNL | PANEL |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| RMC | RIGID METAL CONDUIT |
| R# | RELAY (# = RELAY NUMBER) |
| RD | RED |
| SS | STAINLESS STEEL |
| TEES | TRANSPORTATION ELECTRICAL EQUIPMENT |
| SM | SINGLE MODE |
| TB | TERMINAL BLOCKS |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYPE A CABLE | 36 SINGLE MODE FIBER OPTIC CABLE |
| TYPE D CABLE | 12 SINGLE MODE FIBER OPTIC CABLE |
| TYPE 1 CONDUIT | GALVANIZED RIGID STEEL (GRS) |
| TYPE 2 CONDUIT | TYPE 1 CONDUIT COATED WITH PVC OR POLYETHYLENE |
| TYPE 4 CONDUIT | LIQUIDTIGHT FLEXIBLE METAL CONDUIT |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| XFMR | TRANSFORMER |
| YL | YELLOW |

## INDEX:



## STANDARD NOTES:

- BC INSTALL PULL BOX IN EXISTING CONDUIT RUN.
- CB INSTALL CONDUIT INTO EXISTING PULL BOX.
- SC SPLICE NEW TO EXISTING CONDUCTORS.
- AB ABANDONED
- RD REMOVE AND DISPOSE
- RS REMOVE AND SALVAGE

## WIRING DIAGRAM LEGEND:

- CB CIRCUIT BREAKER
- NB NEUTRAL BUS
- GB GROUND BUS
- ENCLOSURE BOND
- GROUNDING ELECTRODE
- CIRCUIT BREAKER
- R RECEPTACLE

| REVISION NO. | DATE ISSUED | REMARKS |
|---|---|---|
| 2 | 3/26/10 | CMS EXPANSION, INDICATOR LIGHT CONTROL, CMS POWER |
| | | |
| | | |

# GENERAL NOTES, LEGEND, ABBREVIATIONS AND INDEX OF DRAWINGS (CARQUINEZ BRIDGE)

**E-1**

| SHEET | OF |
|---|---|
| 1 | 19 |

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REGISTERED CIVIL ENGINEER — DATE 3/12/10

RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 — CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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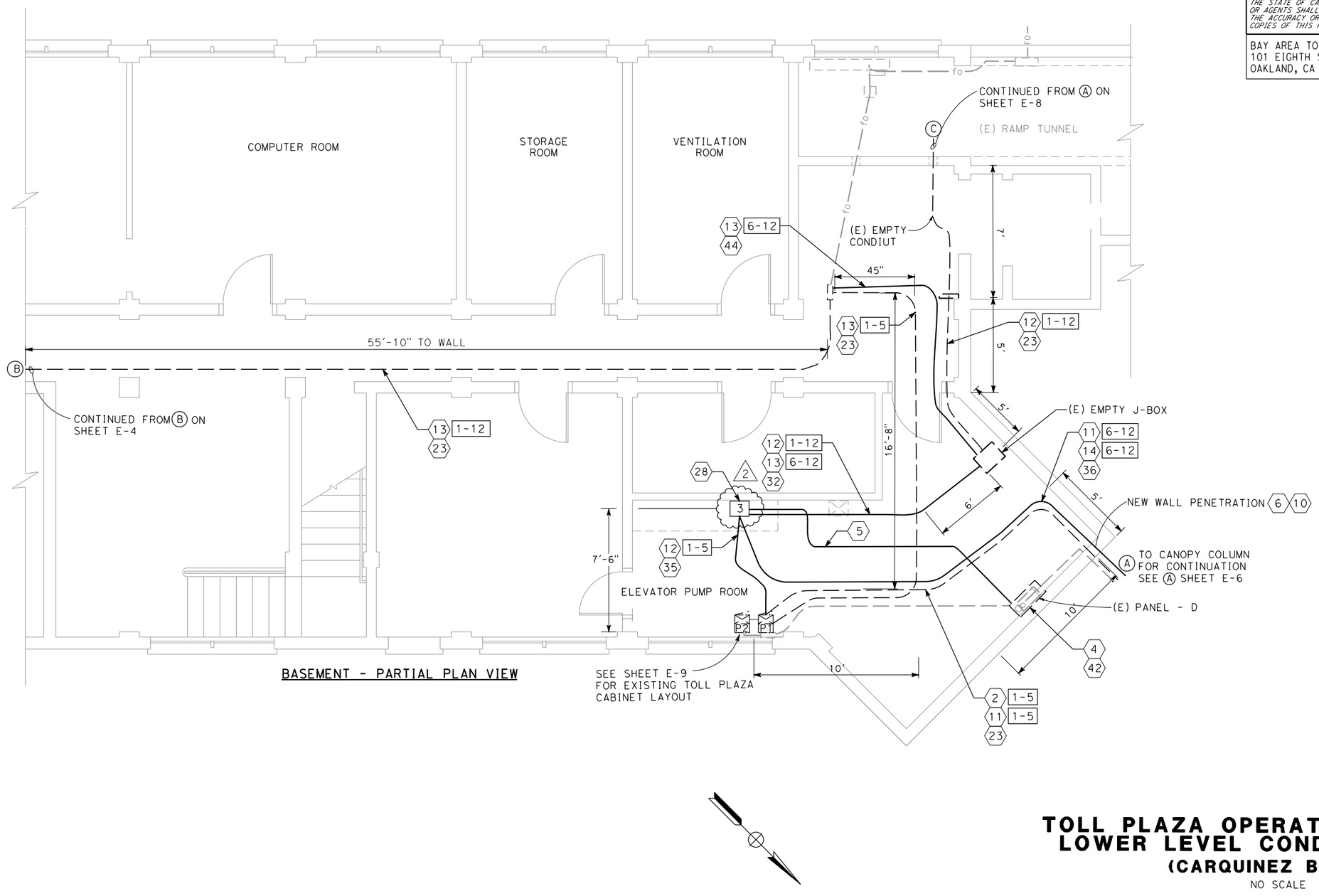


BASEMENT - PARTIAL PLAN VIEW

# TOLL PLAZA OPERATIONS BUILDING LOWER LEVEL CONDUIT ROUTING

## (CARQUINEZ BRIDGE)

NO SCALE

**E-5**

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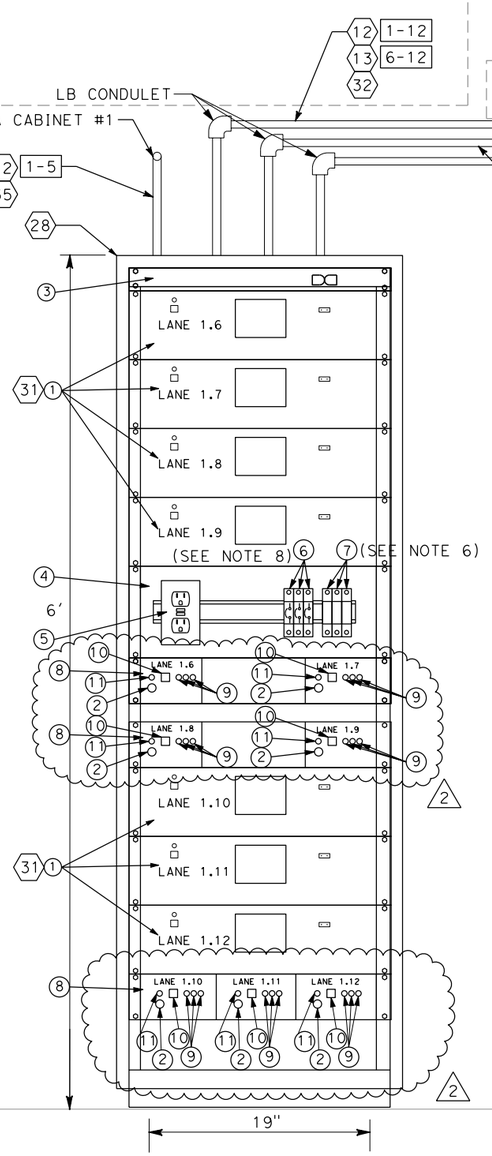
| ITEM | COMPONENT |
|---|---|
| ① | NEW CMS CONTROLLER |
| ② | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| ③ | NEW IP ADDRESSABLE POWER STRIP |
| ④ | NEW ELECTRICAL PANEL |
| ⑤ | NEW 15 AMP GFI OUTLET |
| ⑥ | THREE (3) NEW 2 AMP BREAKER (120 VAC) |
| ⑦ | THREE (3) NEW NEC CLASS 3, 100 WATT 1:1, 120 VAC TRANSFORMERS |

| ITEM | COMPONENT |
|---|---|
| ⑧ | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. SEE SHEET E-19 FOR CABINET DRAWER LAYOUT. |
| ⑨ | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| ⑩ | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| ⑪ | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |

NOTE: CABINET AND EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS




COMPUTER ROOM

## SHEET NOTES:

1. ANY EXISTING FURNITURE REQUIRED TO BE RE-ARRANGED FOR PLACEMENT OF CMS EQUIPMENT RACK SHALL BE COORDINATED WITH LIEUTENANT.
2. SECURE CONDUIT USING CONDUIT CLAMPS OR CHANNEL STRUTS. SEE SHEET E-18 FOR TYP CONDUIT MOUNTING.
3. ALL CABLING IN CMS CABINETS SHALL BE INSTALLED AND NEATLY DRESSED AND SECURED IN CABINETS. SPARE COILED CABLING SHALL BE PROVIDED IN JUNCTION BOXES.
4. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS (I.E., TRANSFORMERS, BREAKERS, ETC.).
5. NEW IP ADDRESSABLE POWER STRIP TO BE RACK MOUNTABLE.
6. CONTRACTOR TO CONNECT THREE (3) LANES TO ONE (1) TRANSFORMER, TWO (2) LANES TO ONE (1) TRANSFORMER, AND TWO (2) LANES TO THE OTHER TRANSFORMER.
7. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.
8. CONTRACTOR TO CONNECT THREE (3) LANES TO ONE (1) 2 AMP BREAKER, TWO (2) LANES TO ONE (1) 2 AMP BREAKER, AND TWO (2) LANES TO THE OTHER 2 AMP BREAKER.

# CMS EQUIPMENT RACK LAYOUT FOR LANES 6-12 (CARQUINEZ BRIDGE)

NO SCALE

**E-10**

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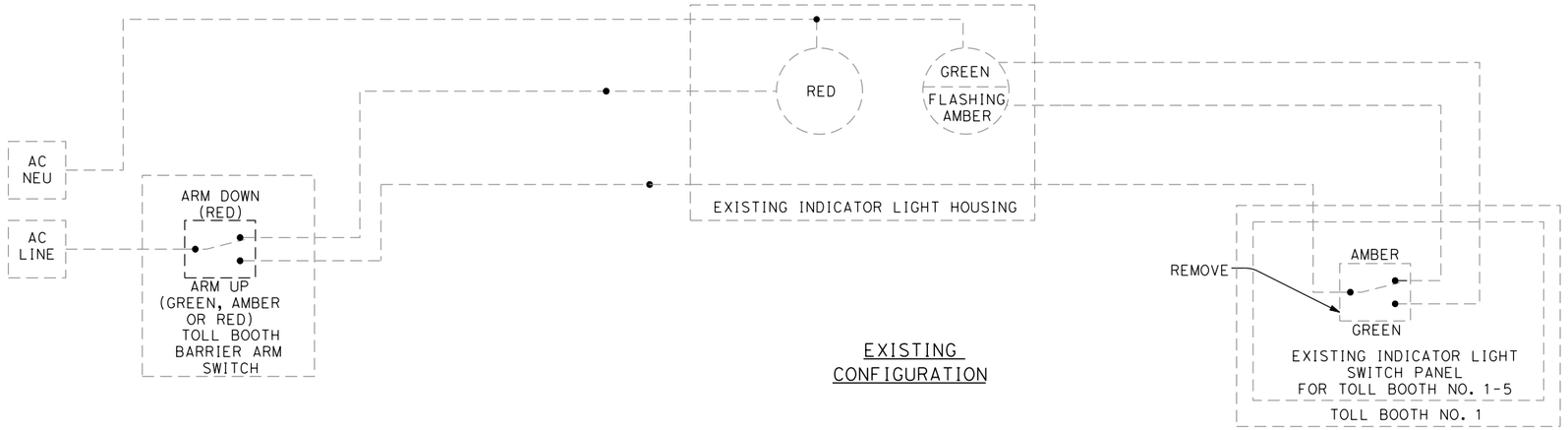
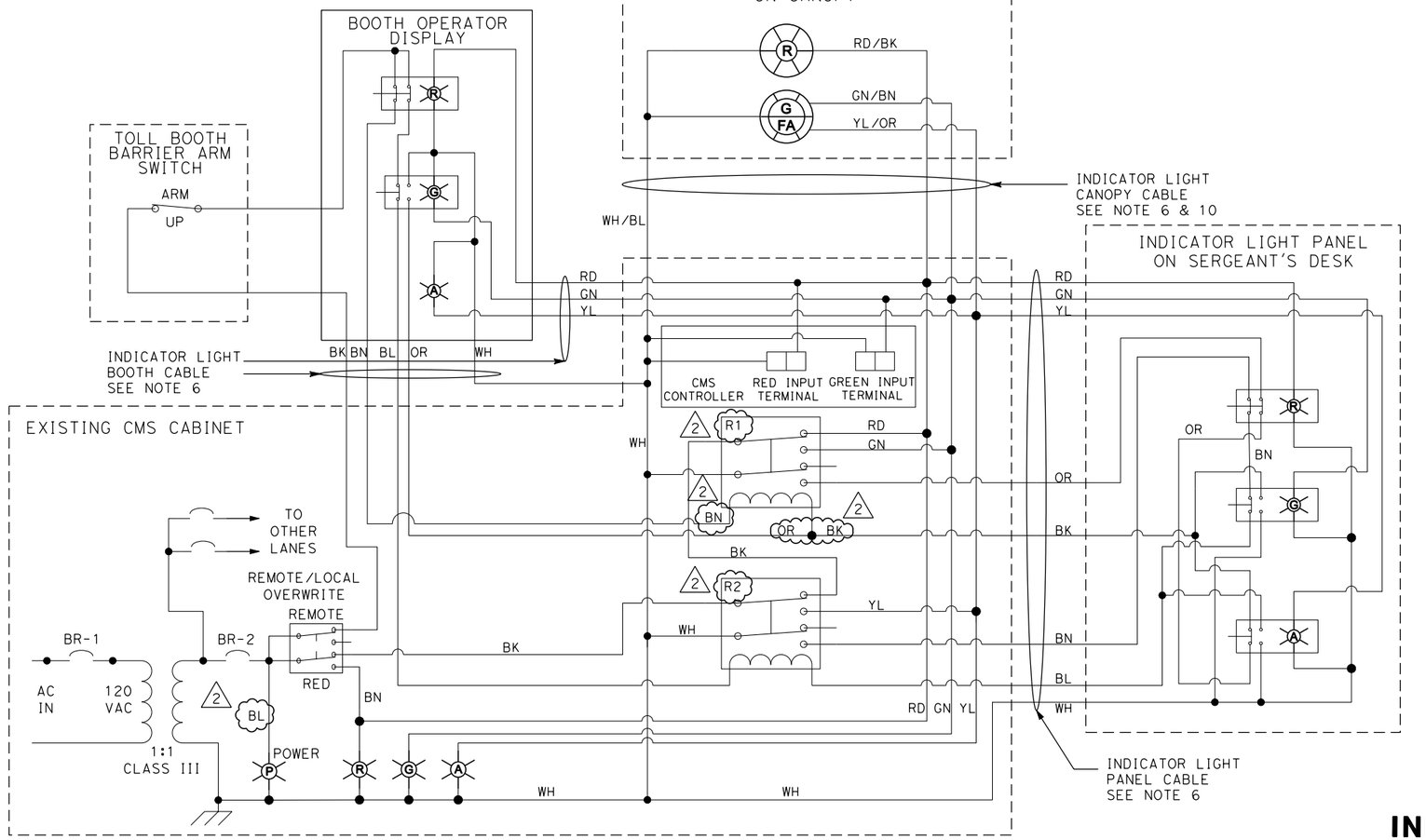



EXISTING CONFIGURATION




PROPOSED CONFIGURATION

## LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- CMS CABINET TERMINAL BLOCK X-B
  X = LANE NUMBER
  B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 8)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)

## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-14 FOR INDICATOR LIGHT SWITCH CONSOLE DETAIL.
3. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
4. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP.
5. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
6. BELDEN 5506UE CABLE OR APPROVED EQUIVALENT.
7. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
8. ONE (1) ½ AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) ½ AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 CMS CONTROLLERS.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 1-5 (CARQUINEZ BRIDGE)

NO SCALE

E-15

| SHEET | OF |
|---|---|
| 15 | 19 |

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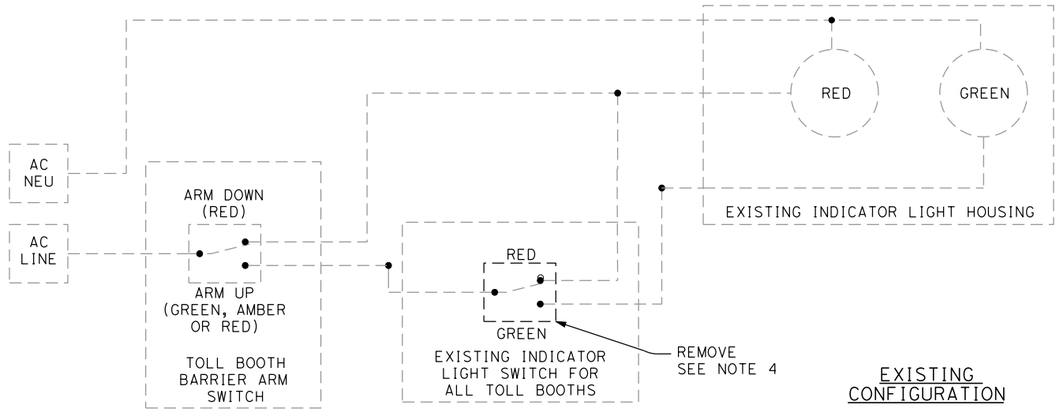


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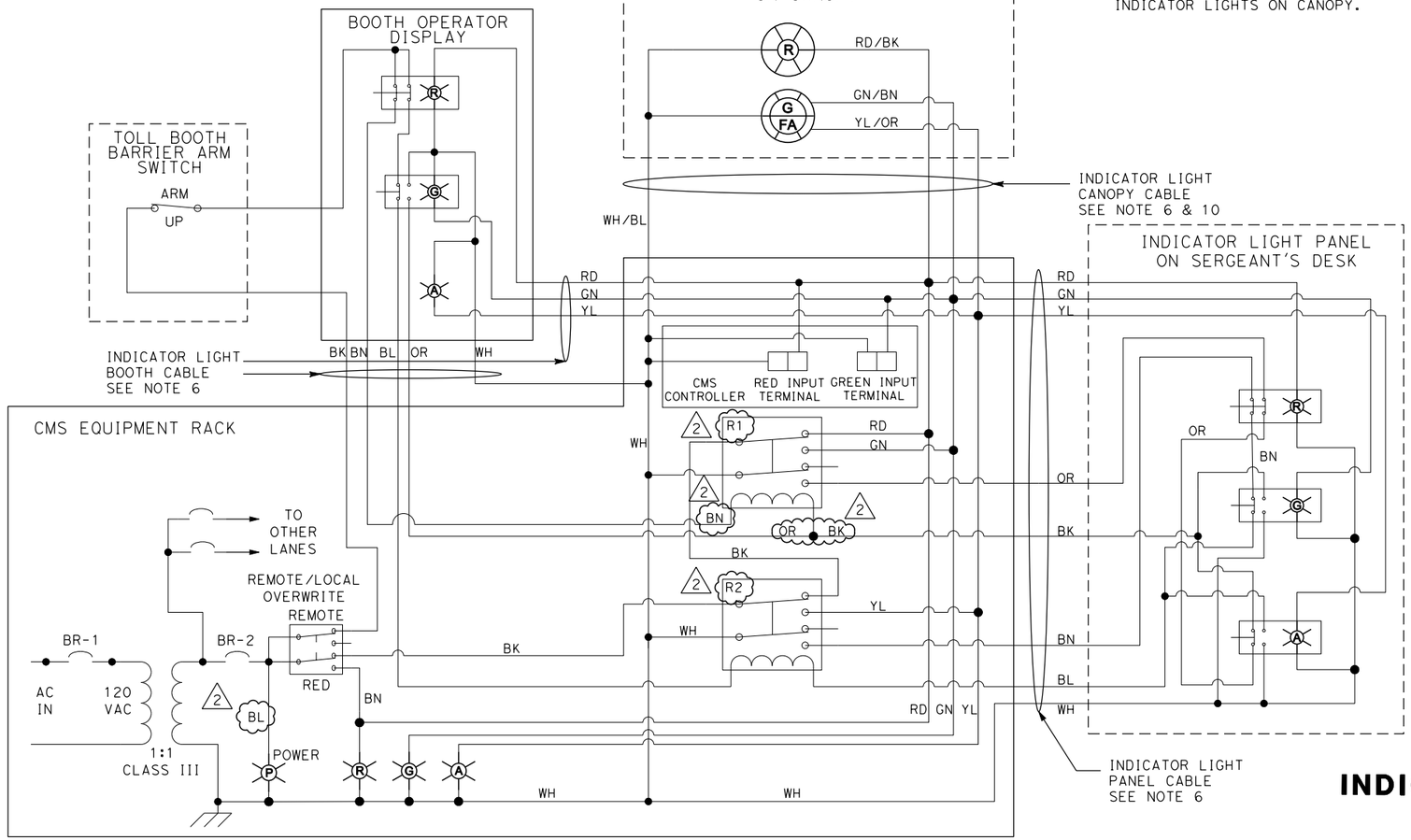


PROPOSED CONFIGURATION

NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-14 FOR INDICATOR LIGHT SWITCH CONSOLE DETAIL.
3. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
4. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
5. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
6. BELDEN 5506UE CABLE OR APPROVED EQUIVALENT.
7. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
8. ONE (1) ½ AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) ½ AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 CMS CONTROLLERS.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- ▣ CMS CABINET TERMINAL BLOCK X-B
  X = LANE NUMBER
  B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 8)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 6-12 (CARQUINEZ BRIDGE)

NO SCALE

E-16

| SHEET | OF |
|---|---|
| 16 | 19 |

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| ITEM | COMPONENT |
|---|---|
| 1 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 2 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| 3 | 6 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT CANOPY CABLE AND POWER. |
| 4 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 5 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. |
| 6 | TWO (2) NEW DPDT RELAYS |
| 7 | DRILLED HOLES AT BOTTOM OF DRAWER FOR INDICATOR LIGHT CABLES WITH RUBBER GROMMETS. |
| 8 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 9 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT BOOTH CABLE |
| 10 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT PANEL CABLE |

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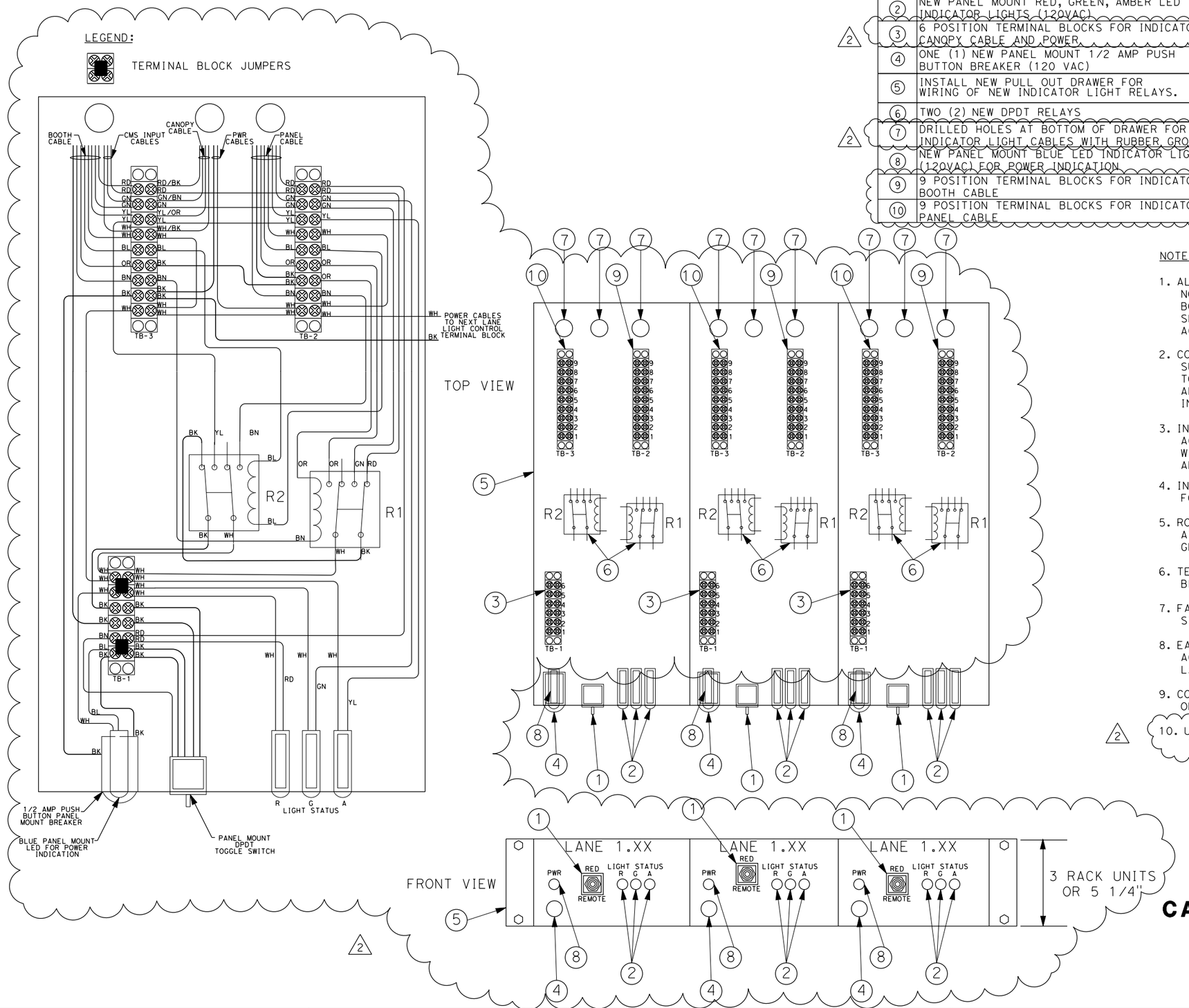


NOTES:

1. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
2. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
3. INDICATOR LIGHT CABLES TO BE WIRED ACCORDING TO THE INDICATOR LIGHT WIRING DIAGRAM AS SHOWN ON SHEETS E-15 AND E-16.
4. INDICATOR LIGHT DRAWER LAYOUT SHOWN FOR TYPICAL CMS CABINET.
5. ROUTE ALL CABLES THROUGH DRILLED HOLES AT BOTTOM OF DRAWER. INCLUDE PLASTIC GROMMETS IN HOLE.
6. TERMINATE ALL CABLES ON NEW TERMINATION BLOCKS.
7. FASTEN ALL CABLES TO DRAWER TO PREVENT STRAINING ON TERMINATION BLOCKS.
8. EACH CABINET DRAWER SHALL BE DESIGNED TO ACCOMMODATE UP TO FOUR (4) INDICATOR CONTROL LANES.
9. CONTRACTOR TO LEAVE AT LEAST ONE RACK UNIT OF SPACE BETWEEN DRAWER AND BOTTOM OF CABINET.
10. USE TERMINAL LUGS FOR ALL CABLE CONNECTIONS TO TERMINAL BLOCKS.

# INDICATOR LIGHT CABINET DRAWER LAYOUT (CARQUINEZ BRIDGE)

NO SCALE

**E-19**

| SHEET | OF |
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| 19 | 19 |

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## GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST VERSION OF THE CALTRANS STANDARD PLAN AND SPECIFICATIONS.
2. CALL UNDERGROUND SERVICE ALERT 48 HOURS BEFORE EXCAVATION U.S.A. (800) 277-2600.
3. ALL ELECTRICAL AND CMS EQUIPMENT, INFRASTRUCTURE, LANDSCAPING OR BUILDINGS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL ELECTRICAL AND CMS EQUIPMENT INCLUDING CONDUITS, JUNCTION AND SPLICE EQUIPMENT RACK ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
5. SERVICE EQUIPMENT, AND CMS CABINET ENCLOSURES, CONTROLLER ASSEMBLIES, CMS AND OTHER ELECTRICAL EQUIPMENT ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATION SHALL BE DETERMINED TO SUIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
6. ALL EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHOWN ON THE PLANS IS FOR REFERENCE AND SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. LOCATIONS ARE APPROXIMATED. ANY DAMAGE TO THE EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.
7. NEW CIRCUIT BREAKERS TO BE INSTALLED TO EXISTING PANEL BOXES SHALL MATCH THE EXISTING TYPE OR APPROVED BY THE ENGINEER AS REQUIRED.
8. ALL DIMENSIONS INDICATED ARE TO BE VERIFIED IN FIELD PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR SHALL IDENTITY AND VERIFY ALL EXISTING UTILITIES, POWER SOURCES AND POWER CONSUMPTIONS AS REQUIRED OR NEEDED AS SHOWN ON THE PLANS PRIOR TO COMMENCING WORK.
10. SEE STRUCTURAL PLANS FOR EXACT LOCATION OF CMS STRUCTURES, FRAMES AND MOUNTING BRACKETS.
11. ALL ABOVE GROUND CONDUIT SHALL BE SUPPORTED AT A MINIMUM OF EVERY 5 FEET.
12. ALL ELECTRICAL ITEMS THAT USE ANCHORS TO ATTACH TO THE CONCRETE STRUCTURES SHALL USE STAINLESS STEEL POWER STUD ANCHORS-THREADED VERSION SIZED PER MANUFACTURER RECOMMENDATION AND EPOXY ANCHOR HOLES USING SEALANT WITH A RATED LIFE OF 25 YEARS OR GREATER.
13. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE NEC & NATIONAL ELECTRICAL SAFETY CODE. ALL COMPONENTS SHALL BE PROPERLY GROUNDED AND BONDED PER NEC REQUIREMENTS. ALL COMPONENTS INCLUDING CONDUITS JUNCTION BOXES, CABLING, EQUIPMENT, AND CABINETS SHALL BE CLEARLY LABELED WITH PROPER TAGS, NAME PLATES, AND I.D. LABELS.
14. CONTRACTOR SHALL USE TYPE 1 CONDUIT IN TUNNEL AND TRENCH, TYPE 2 CONDUIT FOR EXPOSED CONDITIONS AND TYPE 4 FLEXIBLE CONDUIT AS SHOWN ON PLANS.
15. ALL EXTERIOR PULL BOXES AND JUNCTION BOXES SHALL BE NEMA 4X.
16. ALL ELECTRICAL AND EXTERIOR CONNECTIONS SHALL BE WEATHERPROOF.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ANY EXISTING CONDUIT AND/OR JUNCTION BOXES TO BE USED ON THIS CONTRACT PRIOR TO PULLING NEW CABLE THROUGH. ANY DAMAGE TO NEW OR EXISTING CABLE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.

## ABBREVIATIONS:

| | |
|---|---|
| AM | AMBER |
| BK | BLACK |
| BL | BLUE |
| BN | BROWN |
| C | CONDUIT |
| CAB | CABINET |
| CEC | CALIFORNIA ELECTRICAL CODE |
| CMS | CHANGEABLE MESSAGE SIGN |
| COMM | COMMUNICATIONS |
| CPB | COMMUNICATIONS PULL BOX |
| CKT | CIRCUIT |
| E | EXISTING |
| ETC | ELECTRONIC TOLL COLLECTION |
| FDU | FIBER DISTRIBUTION UNIT |
| FO | FIBER OPTIC |
| GFI | GROUND FAULT INTERRUPT |
| GN | GREEN |
| ILB | INDICATOR LIGHT BOOTH |
| ILC | INDICATOR LIGHT CANOPY |
| ILP | INDICATOR LIGHT PANEL |
| J-BOX | JUNCTION BOX |
| JB | JUNCTION BOX |
| KVA | KILO-VOLT AMPERE |
| LCD | LIQUID CRYSTAL DISPLAY |
| LED | LIGHT EMITTING DIODE |
| MLO | MAIN LUG ONLY |
| NEC | NATIONAL ELECTRICAL CODE |
| N | NEUTRAL (GROUNDED CONDUCTOR) |
| ORT | OPEN ROAD TOLLING |
| PB | CEILING/WALL MOUNTED PULL BOX |
| PCC | PORTLAND CEMENT CONCRETE |
| PNL | PANEL |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| RMC | RIGID METAL CONDUIT |
| R# | RELAY (# = RELAY NUMBER) |
| RD | RED |
| SS | STAINLESS STEEL |
| TEES | TRANSPORTATION ELECTRICAL EQUIPMENT |
| SM | SINGLE MODE |
| TB | TERMINAL BLOCKS |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYPE A CABLE | 36 SINGLE MODE FIBER OPTIC CABLE |
| TYPE D CABLE | 12 SINGLE MODE FIBER OPTIC CABLE |
| TYPE 1 CONDUIT | GALVANIZED RIGID STEEL (GRS) |
| TYPE 2 CONDUIT | TYPE 1 CONDUIT COATED WITH PVC OR POLYETHYLENE |
| TYPE 4 CONDUIT | LIQUIDTIGHT FLEXIBLE METAL CONDUIT |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| XFMR | TRANSFORMER |
| YL | YELLOW |

## INDEX:



## LEGEND:

- CHANGEABLE MESSAGE SIGN
- EXISTING CONDUIT
- EXISTING CONDUIT WITH NEW CABLE
- NEW CONDUIT
- JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW CMS PLAZA CABINET
- EXISTING CMS PLAZA CABINET
- CONDUIT IN
- CONDUIT OUT
- X-Y LANE X TO LANE Y CABLES
- TERMINAL BLOCK
- — fo — — — EXISTING FIBER OPTIC CABLE
- EXISTING TRAFFIC SIGNAL INDICATOR
- QUAD RECEPTICAL
- DUPLEX RECEPTICAL
- S NEW INDICATOR LIGHT SWITCH CONSOLE PANEL
- RISER CONDUITS
- DROP CONDUITS
- NEW LED INDICATOR BOX
- S EXISTING INDICATOR LIGHT SWITCH

## STANDARD NOTES:

- BC INSTALL PULL BOX IN EXISTING CONDUIT RUN.
- CB INSTALL CONDUIT INTO EXISTING PULL BOX.
- SC SPLICE NEW TO EXISTING CONDUCTORS.
- AB ABANDONED
- RD REMOVE AND DISPOSE
- RS REMOVE AND SALVAGE

## WIRING DIAGRAM LEGEND:

- CB CIRCUIT BREAKER
- NB NEUTRAL BUS
- GB GROUND BUS
- ENCLOSURE BOND
- GROUNDING ELECTRODE
- CIRCUIT BREAKER
- R RECEPTACLE

| REVISION NO. | DATE ISSUED | REMARKS |
|---|---|---|
| 2 | 3/26/10 | CMS EXPANSION, INDICATOR LIGHT CONTROL, CMS POWER |
| | | |
| | | |

# GENERAL NOTES, LEGEND, ABBREVIATIONS AND INDEX OF DRAWINGS (DUMBARTON BRIDGE)

E-1

| SHEET | OF |
|---|---|
| 1 | 15 |

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REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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55 S. MARKET STREET
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SAN JOSE, CA 95113

## PROJECT NOTES:

1. INSTALL NEW TYPE D CABLE IN EXISTING CONDUIT.
2. INSTALL NEW TYPE D CABLE.
3. INSTALL (N) TYPE 1 JUNCTION BOX. MOUNT AND SECURE ON (E) TUNNEL CEILING.
4. INSTALL NEW THREE (3) 15A-1P CIRCUIT BREAKER IN (E) SPACES 14, 16 AND 18 (120V CMS SIGNS).
5. INSTALL NEW ONE (1) 15A-IP CIRCUIT BREAKER FOR NEW CMS CABINET #3 IN (E) SPACE 20.
6. INSTALL NEW TYPE 1 (¾" C) CONDUIT WITH (2 #12 AND 1 #12G) (120 V, CMS CABINET #3) AND PROVIDE CONDUIT SUPPORT. (2)
7. INSTALL NEW TYPE 1 (1" C) CONDUIT.
8. INSTALL TYPE 3 JUNCTION BOX BELOW CANOPY AS SPECIFIED IN CONTRACT DOCUMENTS.
9. INSTALL NEW CAT-5e CABLE.
10. ALL WALL, CEILING AND FLOOR PENETRATIONS SHALL BE CORE-DRILLED AS DIRECTED AND APPROVED BY CALTRANS SUFFICIENTLY LARGE TO ACCOMMODATE CONDUIT PLUS FLUSH MOUNTED END BELL. ALL CORE-DRILLS SHALL BE MADE WATER-TIGHT, SEALED AROUND CONDUIT PER CALTRANS REQUIREMENTS WITH FAST-SETTING EPOXY RESIN THROUGHOUT THE DEPTH OF HOLE.
11. INSTALL NEW INDICATOR LIGHT CANOPY CABLE.
12. INSTALL NEW INDICATOR LIGHT BOOTH CABLE.
13. INSTALL NEW INDICATOR LIGHT CONSOLE CABLE.
14. INSTALL NEW CMS COMM CABLE.
15. EXISTING TYPE 3 JUNCTION BOX BELOW CANOPY.
16. FINAL LOCATION OF CMS WORKSTATION.
17. INSTALL NEW TYPE 4 (1½" C) CONDUIT.
18. INSTALL NEW FIBER OPTIC DUPLEX JUMPER CABLES.
19. (E) FDU TO REMAIN.
20. REMOVE AND DISPOSE OF EXISTING INDICATOR LIGHT CABLE.
21. INSTALL NEW CMS PANEL AS SPECIFIED IN CONTRACT DOCUMENTS.
22. INSTALL TYPE 2 (1 ½" C) CONDUIT WITH 4 #12 & 1 #12G (120V, CMS SIGN)
23. ROUTE NEW CABLES THROUGH EXISTING CONDUIT.
24. MODIFY EXISTING GREEN INDICATOR LIGHT AND REPLACE WITH GREEN/FLASHING AMBER LED INDICATOR BULB. REPLACE EXISTING RED INDICATOR LIGHT WITH RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.
25. INSTALL NEW TYPE 2 (1½" C) CONDUIT.
26. INSTALL NEW TYPE 2 (1 ½" C) CONDUIT WITH 6 #12 & 3 #12G (120V, CMS SIGN)
27. ROUTE NEW CMS COMM CABLE THROUGH EXISTING JUNCTION BOX.
28. INSTALL NEW CMS PLAZA CABINET FOR LANES 1-3 AS SPECIFIED IN CONTRACT DOCUMENTS.
29. INSTALL INDICATOR LIGHT SWITCH CONSOLE PANEL.
30. REMOVE EXISTING INDICATOR LIGHT SWITCH IN TOLL BOOTH.
31. INSTALL NEW CMS CONTROLLERS. ROUTE CAT-5E PATCH CABLES FROM EACH CMS CONTROLLER TO NEW ETHERNET SWITCH IN EXISTING CMS CABINET.
32. INSTALL NEW TYPE 1 (2" C) CONDUIT.
33. INSTALL NEW TYPE 2 (2" C) CONDUIT.
34. INSTALL TYPE 1 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
35. INSTALL NEW TYPE 1 (1½" C) CONDUIT.
36. INSTALL NEW 6"X6"X4" JUNCTION BOX
37. DISCONNECT AT (E) PANEL-Q BRANCH CIRCUITS #13, 15, AND 17, AND LABEL BREAKERS AS SPARES.
38. INSTALL NEW TYPE 4 (2" C) CONDUIT
39. INSTALL AND TERMINATE INDICATOR LIGHT CABLES TO NEW TERMINAL BLOCKS AND WIRE TO SWITCH PANEL AS SHOWN IN PLANS AND APPROVED BY THE ENGINEER.
40. INSTALL LB FITTING.
41. INSTALL NEW PUSH BUTTON LED INDICATOR BOX.
42. PROVIDE NEW REVISED (TYPED WRITTEN) PANEL SCHEDULE.
43. INSTALL NEW TYPE 4 (1" C) CONDUIT.
44. INSTALL NEW TYPE 1 (1 ½" C) CONDUIT WITH 6 #12 & 3 #12G (120V, CMS SIGN) TO (E) PANEL-TB.
45. CORE DRILL (E) CONCRETE SLAB.
46. INSTALL TYPE 2 (1 ½" C) CONDUIT WITH 2 #12 & 1 #12G (120V, CMS SIGN)
47. REPLACE EXISTING RED INDICATOR LIGHT WITH NEW RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.

# PROJECT NOTES (DUMBARTON BRIDGE)

**E-2**

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| ITEM | COMPONENT |
|---|---|
| 1 | INSTALL NEW CMS CONTROLLER. |
| 2 | REMOVE AND SALVAGE EXISTING ETHERNET SWITCH AT CABINET BOTTOM AND FURNISH AND INSTALL NEW RACK MOUNTABLE WITH 14-10/100BASE-T AND 2-100BASE-FX(SM) PORTS. FIBER PORT TO MATCH EXISTING. INSTALL NEW SWITCH RACK MOUNTED-NO SHELVES. |
| 3 | EXISTING PLAZA F.O. PATCH PANEL. |
| 4 | REMOVE/REPLACE EXISTING POWER STRIP WITH NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP. |
| 5 | EXISTING UPS TO BE REMOVED |
| 6 | NEW ELECTRICAL PANEL |

| ITEM | COMPONENT |
|---|---|
| 7 | EXISTING DATA TVSS TO BE REMOVED. |
| 8 | NEW 15 AMP GFI OUTLET |
| 9 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| 10 | REMOVE EXISTING 1/4 AMP BREAKERS. |
| 11 | EXISTING ELECTRICAL PANEL |
| 12 | EXISTING 15 AMP OUTLET TO BE REMOVED |
| 13 | REMOVE/REPLACE EXISTING CMS CONTROLLERS WITH NEW CMS CONTROLLERS. |
| 14 | MOVE EXISTING EQUIPMENT TO ACCOMODATE NEW CABINET LAYOUT. |
| 15 | NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP |

| ITEM | COMPONENT |
|---|---|
| 16 | ONE (1) NEW 2 AMP BREAKER (120 VAC) |
| 17 | ONE (1) NEW NEC CLASS 3, 100 WATT 1:1, 120 VAC TRANSFORMER |
| 18 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 19 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 20 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. SEE SHEET E-15 FOR CABINET DRAWER LAYOUT. |
| 21 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120 VAC) FOR POWER INDICATION |

NOTES:

1. EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS.
2. REMOVED EQUIPMENT AND MATERIALS SHALL BE RETURNED TO BATA.
3. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
4. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
5. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS.
6. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS.
7. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.
8. EXISTING CMS CONTROLLER TO BE REPLACED WITH NEW CONTROLLER. NEW CMS CONTROLLER TO BE PROVIDED BY BATA.

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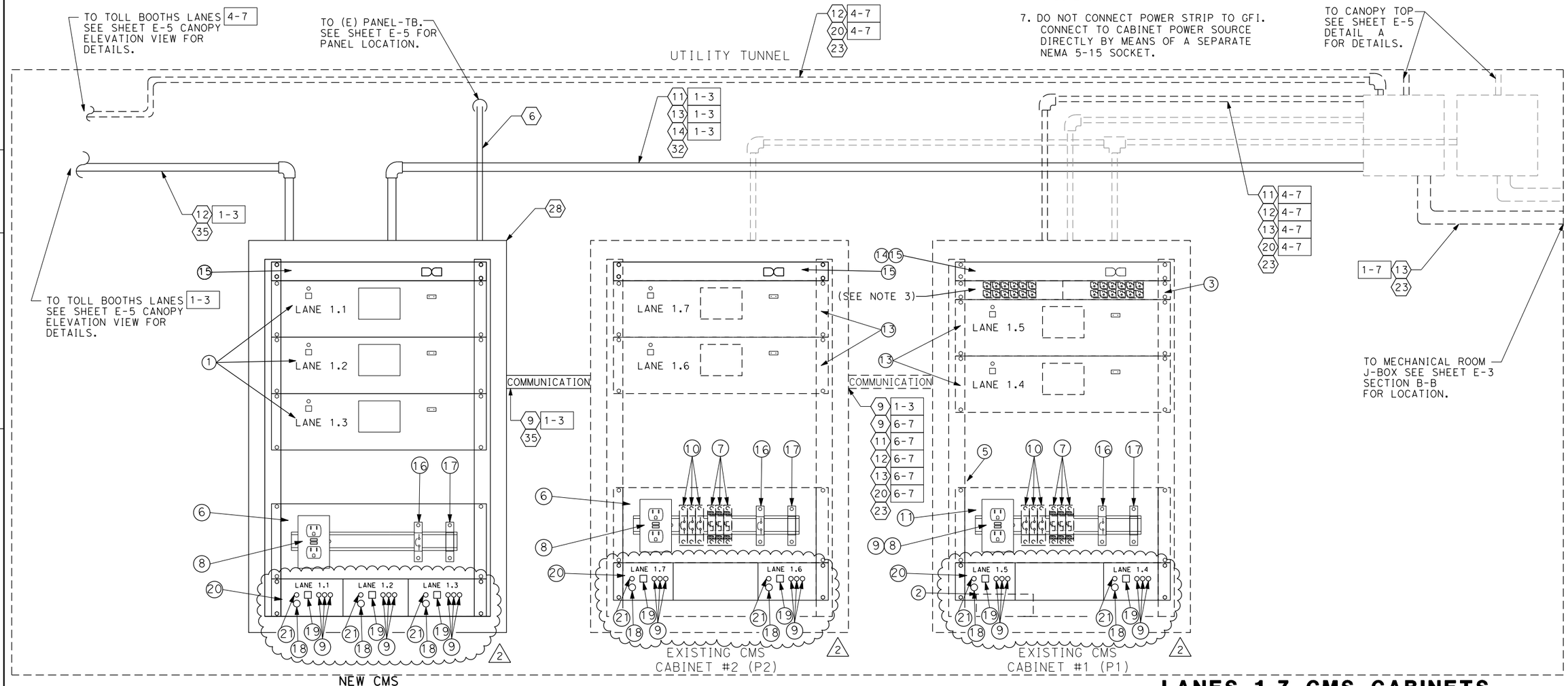


LANES 1-7 CMS CABINET ELEVATION VIEW

(SEE SHEETS E-3 AND E-5 FOR CMS CABINET LOCATIONS)

# LANES 1-7 CMS CABINETS ELEVATION VIEW (DUMBARTON BRIDGE)

NO SCALE

E-6

| SHEET | OF |
|---|---|
| 6 | 15 |

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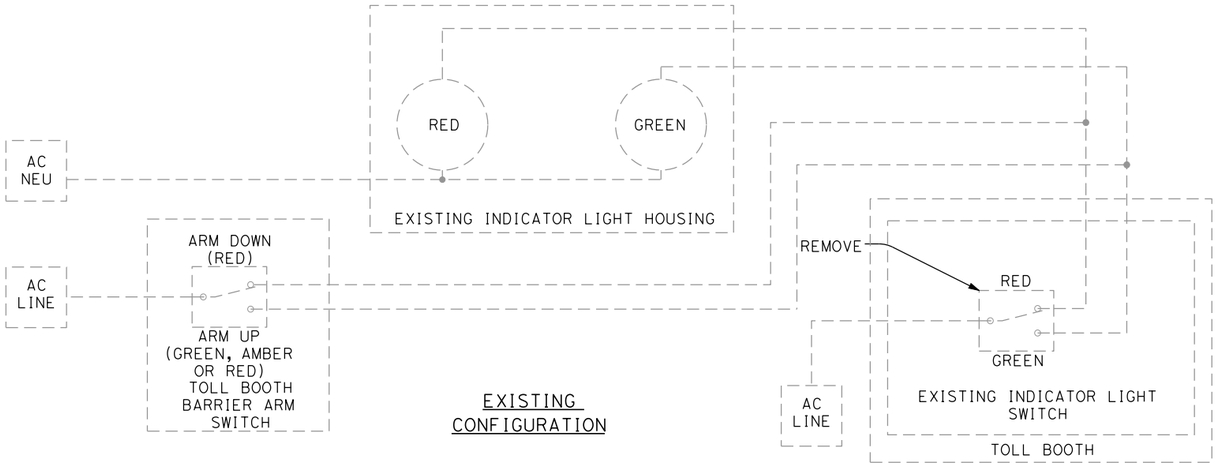
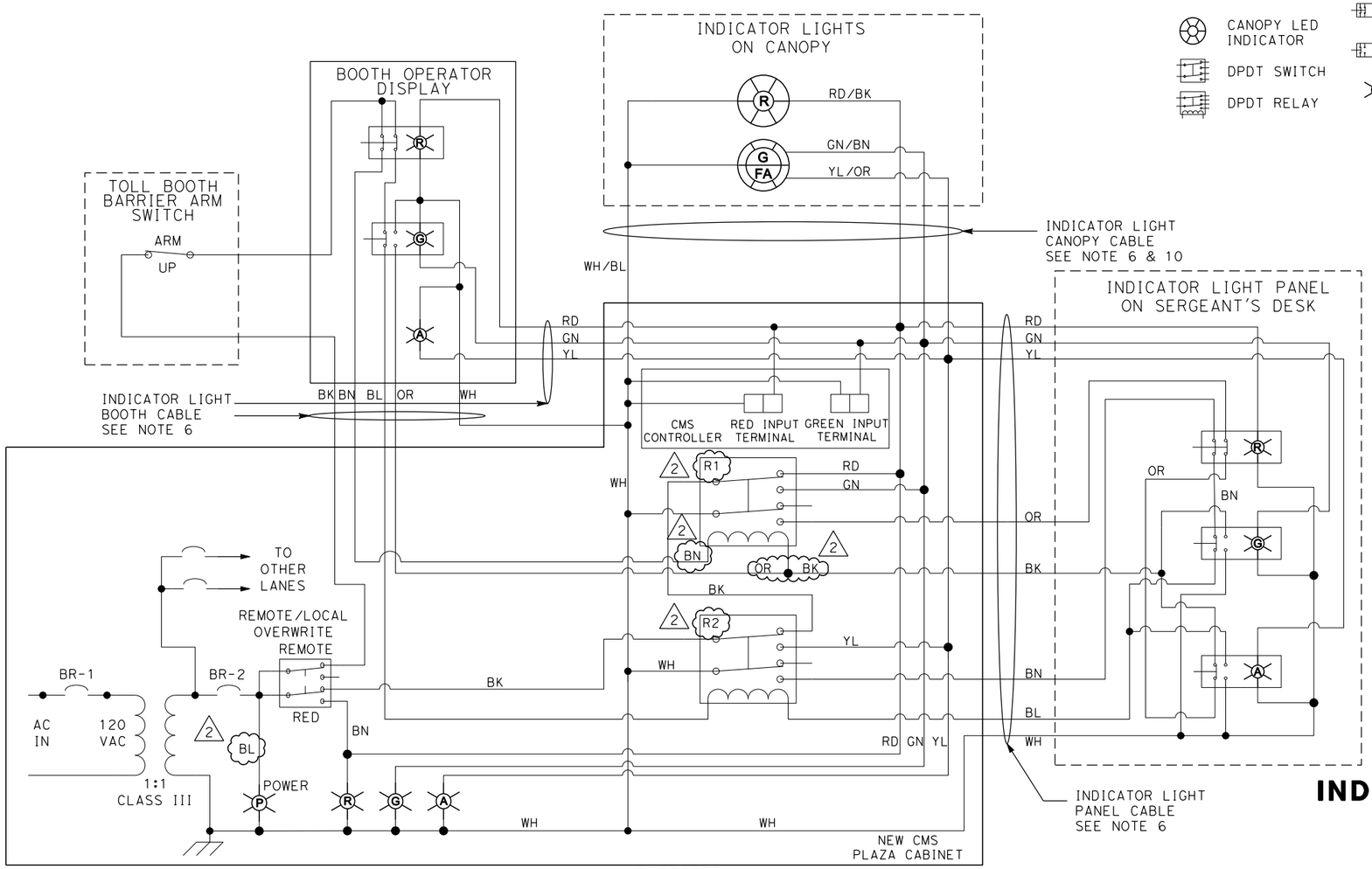
## LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- CMS CABINET TERMINAL BLOCK X-B
  X = LANE NUMBER
  B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 7)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)




EXISTING CONFIGURATION




PROPOSED CONFIGURATION

## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-10 FOR INDICATOR LIGHT SWITCH CONSOLE PANEL DETAIL.
3. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
4. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
5. BELDEN 5506UE OR APPROVED EQUIVALENT.
6. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
7. ONE (1) 1/2 AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) 1/2 AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
8. INTERCEPT EXISTING GATE ARM CABLE IN TOLL Bbooth.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 CMS CONTROLLERS.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 1-3 (DUMBARTON BRIDGE)

NO SCALE

E-11

| SHEET | OF |
|---|---|
| 11 | 15 |

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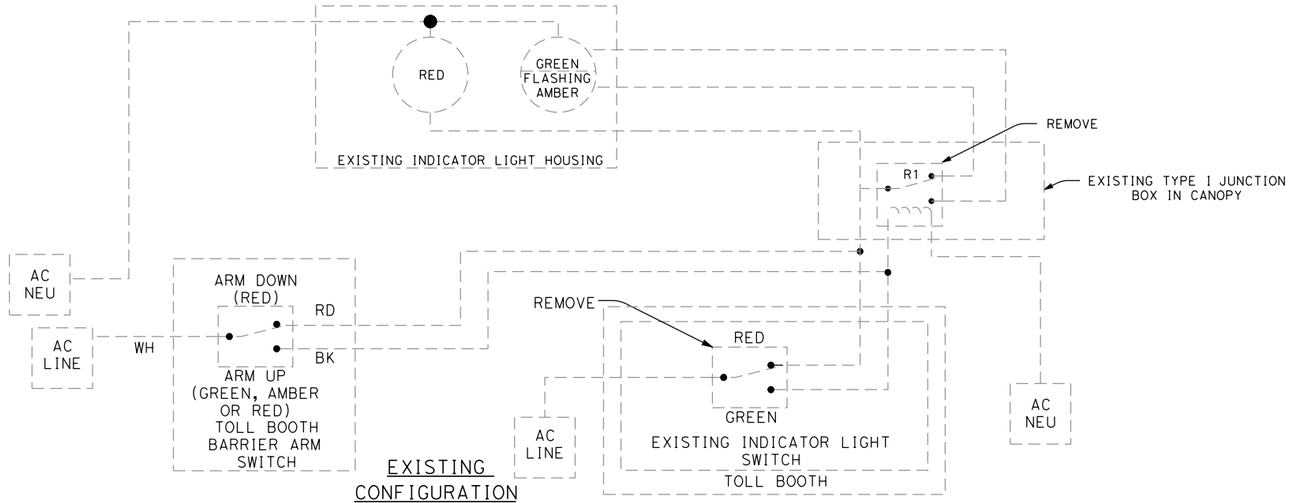
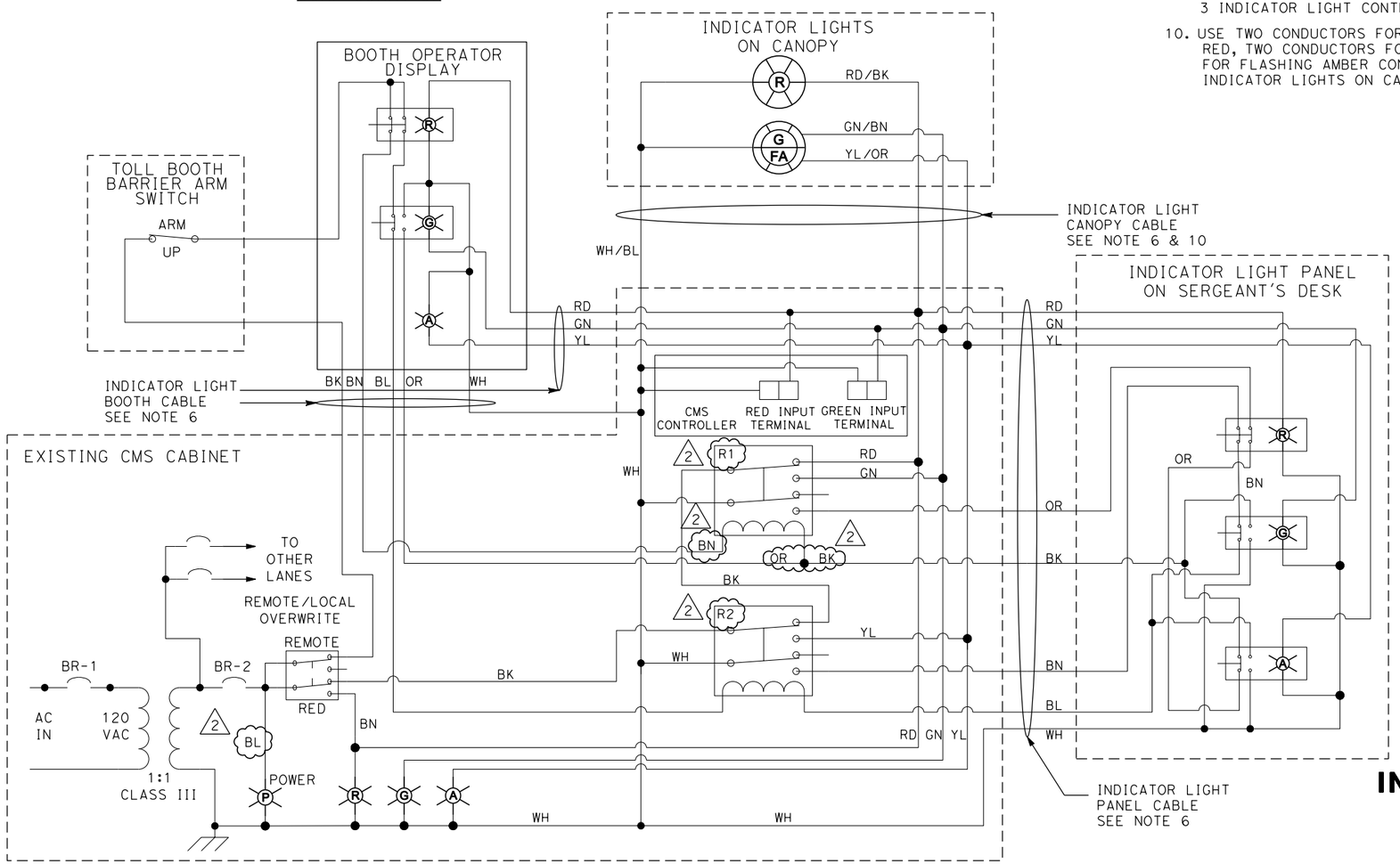
## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-10 FOR INDICATOR LIGHT SWITCH CONSOLE PANEL DETAIL.
3. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
4. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
5. BELDEN 5506UE OR APPROVED EQUIVALENT.
6. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
7. ONE (1) 2 AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) 2 AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
8. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 INDICATOR LIGHT CONTROL LANES.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.




EXISTING CONFIGURATION




PROPOSED CONFIGURATION

## LEGEND

| | |
|---|---|
| (G) | GREEN INDICATOR LED LIGHT, 120 VAC |
| (A) | AMBER INDICATOR LED LIGHT, 120 VAC |
| (R) | RED INDICATOR LED LIGHT, 120 VAC |
| (FA) | FLASHING AMBER LED LIGHT, 120 VAC |
| ▣ | CMS CABINET TERMINAL BLOCK X-B<br>X = LANE NUMBER<br>B = TERMINAL BLOCK NUMBER |
| BR-1 | 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET) |
| BR-2 | ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 7) |
| | CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9) |
| | BREAKER |
| | CANOPY LED INDICATOR |
| | DPDT SWITCH |
| | DPDT RELAY |
| | NC + NC PUSH BUTTON SWITCH W/ INDICATOR |
| | NC + NO PUSH BUTTON SWITCH W/ INDICATOR |
| | PANEL MOUNT LIGHT INDICATOR (120 VAC) |

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 4-7 (DUMBARTON BRIDGE)

NO SCALE

E-12

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|---|---|
| 12 | 15 |

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REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

RAMSEY J. HISSEN No. C-39608 Exp. 12/31/10 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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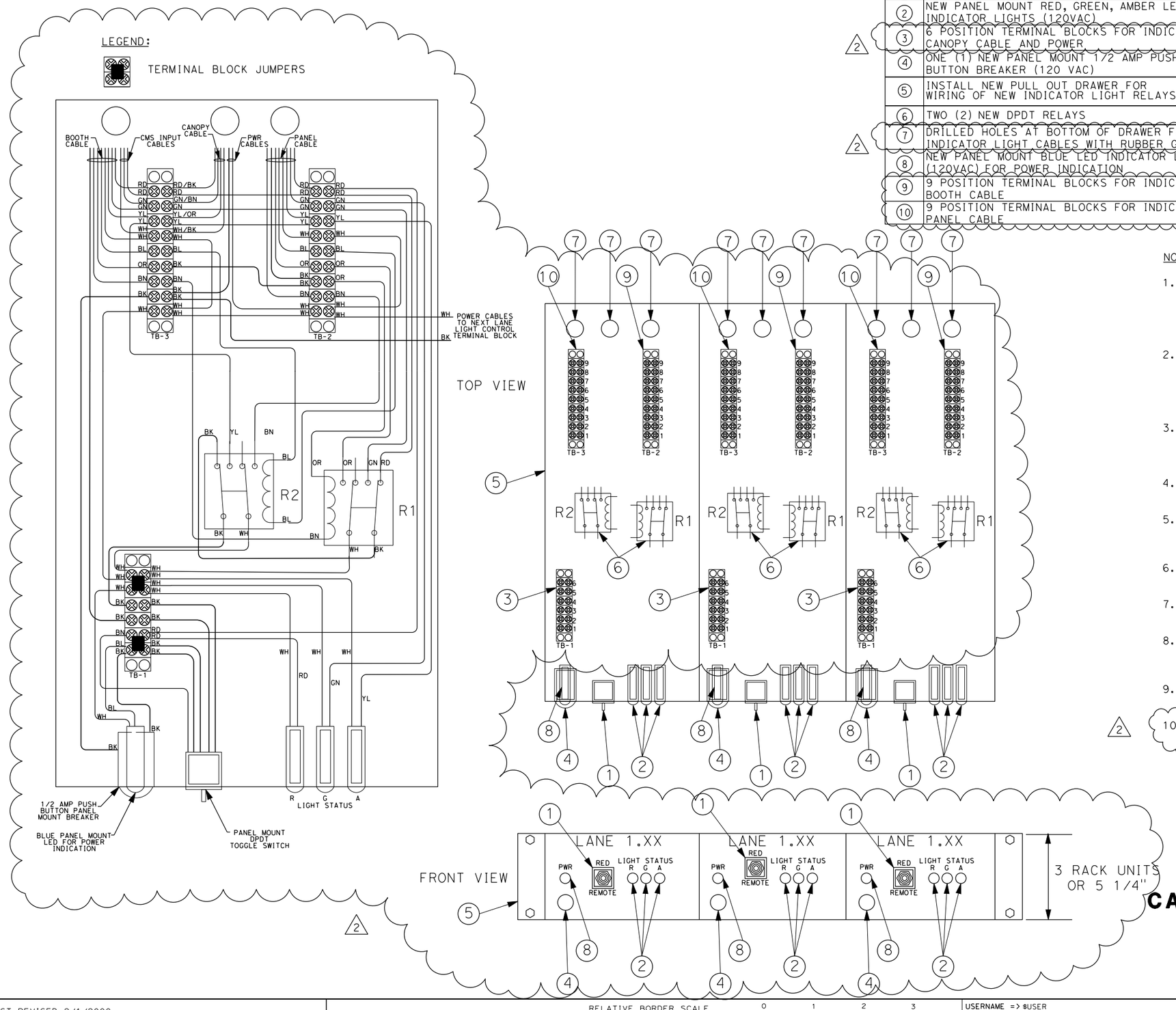
OAKLAND, CA 94607

URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113

| ITEM | COMPONENT |
|---|---|
| 1 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 2 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| 3 | 6 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT CANOPY CABLE AND POWER |
| 4 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 5 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. |
| 6 | TWO (2) NEW DPDT RELAYS |
| 7 | DRILLED HOLES AT BOTTOM OF DRAWER FOR INDICATOR LIGHT CABLES WITH RUBBER GROMMETS. |
| 8 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 9 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT BOOTH CABLE |
| 10 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT PANEL CABLE |

LEGEND:

TERMINAL BLOCK JUMPERS




NOTES:

1. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
2. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
3. INDICATOR LIGHT CABLES TO BE WIRED ACCORDING TO THE INDICATOR LIGHT WIRING DIAGRAM AS SHOWN ON SHEETS E-11 AND E-12.
4. INDICATOR LIGHT DRAWER LAYOUT SHOWN FOR TYPICAL CMS CABINET.
5. ROUTE ALL CABLES THROUGH DRILLED HOLES AT BOTTOM OF DRAWER. INCLUDE PLASTIC GROMMETS IN HOLE.
6. TERMINATE ALL CABLES ON NEW TERMINATION BLOCKS.
7. FASTEN ALL CABLES TO DRAWER TO PREVENT STRAINING ON TERMINATION BLOCKS.
8. EACH CABINET DRAWER SHALL BE DESIGNED TO ACCOMMODATE UP TO FOUR (4) INDICATOR CONTROL LANES.
9. CONTRACTOR TO LEAVE AT LEAST ONE RACK UNIT OF SPACE BETWEEN DRAWER AND BOTTOM OF CABINET.
10. USE TERMINAL LUGS FOR ALL CABLE CONNECTIONS TO TERMINAL BLOCKS.

# INDICATOR LIGHT CABINET DRAWER LAYOUT (DUMBARTON BRIDGE)

NO SCALE

E-15

| SHEET | OF |
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| 15 | 15 |

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## GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST VERSION OF THE CALTRANS STANDARD PLAN AND SPECIFICATIONS.
2. CALL UNDERGROUND SERVICE ALERT 48 HOURS BEFORE EXCAVATION U.S.A. (800) 277-2600.
3. ALL ELECTRICAL AND CMS EQUIPMENT, INFRASTRUCTURE, LANDSCAPING OR BUILDINGS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL ELECTRICAL AND CMS EQUIPMENT INCLUDING CONDUITS, JUNCTION AND SPLICE EQUIPMENT RACK ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
5. SERVICE EQUIPMENT, AND CMS CABINET ENCLOSURES, CONTROLLER ASSEMBLIES, CMS AND OTHER ELECTRICAL EQUIPMENT ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATION SHALL BE DETERMINED TO SUIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
6. ALL EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHOWN ON THE PLANS IS FOR REFERENCE AND SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. LOCATIONS ARE APPROXIMATED. ANY DAMAGE TO THE EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.
7. NEW CIRCUIT BREAKERS TO BE INSTALLED TO EXISTING PANEL BOXES SHALL MATCH THE EXISTING TYPE OR APPROVED BY THE ENGINEER AS REQUIRED.
8. ALL DIMENSIONS INDICATED ARE TO BE VERIFIED IN FIELD PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR SHALL IDENTITY AND VERIFY ALL EXISTING UTILITIES, POWER SOURCES AND POWER CONSUMPTIONS AS REQUIRED OR NEEDED AS SHOWN ON THE PLANS PRIOR TO COMMENCING WORK.
10. SEE STRUCTURAL PLANS FOR EXACT LOCATION OF CMS STRUCTURES, FRAMES AND MOUNTING BRACKETS.
11. ALL ABOVE GROUND CONDUIT SHALL BE SUPPORTED AT A MINIMUM OF EVERY 5 FEET.
12. ALL ELECTRICAL ITEMS THAT USE ANCHORS TO ATTACH TO THE CONCRETE STRUCTURES SHALL USE STAINLESS STEEL POWER STUD ANCHORS-THREADED VERSION SIZED PER MANUFACTURER RECOMMENDATION AND EPOXY ANCHOR HOLES USING SEALANT WITH A RATED LIFE OF 25 YEARS OR GREATER.
13. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE CEC, NEC & NATIONAL ELECTRICAL SAFETY CODE. ALL COMPONENTS SHALL BE PROPERLY GROUNDED AND BONDED PER NEC REQUIREMENTS. ALL COMPONENTS INCLUDING CONDUITS JUNCTION BOXES, CABLING, EQUIPMENT, AND CABINETS SHALL BE CLEARLY LABELED WITH PROPER TAGS, NAME PLATES, AND I.D. LABELS.
14. CONTRACTOR SHALL USE TYPE 1 CONDUIT IN TUNNEL AND TRENCH, TYPE 2 CONDUIT FOR EXPOSED CONDITIONS AND TYPE 4 FLEXIBLE CONDUIT AS SHOWN ON PLANS.
15. ALL EXTERIOR PULL BOXES AND JUNCTION BOXES SHALL BE NEMA 4X.
16. ALL ELECTRICAL AND EXTERIOR CONNECTIONS SHALL BE WEATHERPROOF.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ANY EXISTING CONDUIT AND/OR JUNCTION BOXES TO BE USED ON THIS CONTRACT PRIOR TO PULLING NEW CABLE THROUGH. ANY DAMAGE TO NEW OR EXISTING CABLE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.

## LEGEND:

- CHANGEABLE MESSAGE SIGN
- EXISTING CONDUIT
- EXISTING CONDUIT WITH NEW CABLE
- NEW CONDUIT
- JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW CMS CABINET
- EXISTING PLAZA CABINET
- CONDUIT IN
- CONDUIT OUT
- EXISTING INDICATOR LIGHT SWITCH PANEL
- LANE X TO LANE Y CABLES
- TERMINAL BLOCK
- EXISTING FIBER OPTIC CABLE
- EXISTING TRAFFIC SIGNAL INDICATOR
- QUAD RECEPTICAL
- DUPLEX RECEPTICAL
- NEW EQUIPMENT RACK # = RACK TYPE
- NEW WORKSTATION
- NEW INDICATOR LIGHT SWITCH CONSOLE PANEL
- RISER CONDUITS
- DROP CONDUITS
- NEW LED INDICATOR BOX

## ABBREVIATIONS:

| | |
|---|---|
| AM | AMBER |
| BK | BLACK |
| BL | BLUE |
| BN | BROWN |
| C | CONDUIT |
| CAB | CABINET |
| CEC | CALIFORNIA ELECTRICAL CODE |
| CMS | CHANGEABLE MESSAGE SIGN |
| COMM | COMMUNICATIONS |
| CPB | COMMUNICATIONS PULL BOX |
| CKT | CIRCUIT |
| E | EXISTING |
| ETC | ELECTRONIC TOLL COLLECTION |
| FDU | FIBER DISTRIBUTION UNIT |
| FO | FIBER OPTIC |
| GFI | GROUND FAULT INTERRUPT |
| GN | GREEN |
| ILB | INDICATOR LIGHT BOOTH |
| ILC | INDICATOR LIGHT CANOPY |
| ILP | INDICATOR LIGHT PANEL |
| IT | INFORMATION TECHNOLOGY |
| J-BOX | JUNCTION BOX |
| JB | JUNCTION BOX |
| KVA | KILO-VOLT AMPERE |
| LCD | LIQUID CRYSTAL DISPLAY |
| LED | LIGHT EMITTING DIODE |
| MLO | MAIN LUG ONLY |
| NEC | NATIONAL ELECTRICAL CODE |
| N | NEUTRAL (GROUNDED CONDUCTOR) |
| ORT | OPEN ROAD TOLLING |
| PB | CEILING/WALL MOUNTED PULL BOX |
| PCC | PORTLAND CEMENT CONCRETE |
| PNL | PANEL |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| RMC | RIGID METAL CONDUIT |
| R# | RELAY (# = RELAY NUMBER) |
| RD | RED |
| SS | STAINLESS STEEL |
| TEES | TRANSPORTATION ELECTRICAL EQUIPMENT |
| SM | SINGLE MODE |
| TB | TERMINAL BLOCKS |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYPE A CABLE | 36 SINGLE MODE FIBER OPTIC CABLE |
| TYPE D CABLE | 12 SINGLE MODE FIBER OPTIC CABLE |
| TYPE 1 CONDUIT | GALVANIZED RIGID STEEL (GRS) |
| TYPE 2 CONDUIT | TYPE 1 CONDUIT COATED WITH PVC OR POLYETHYLENE |
| TYPE 4 CONDUIT | LIQUIDTIGHT FLEXIBLE METAL CONDUIT |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| XFMR | TRANSFORMER |
| YL | YELLOW |

## INDEX:



## STANDARD NOTES:

- BC INSTALL PULL BOX IN EXISTING CONDUIT RUN.
- CB INSTALL CONDUIT INTO EXISTING PULL BOX.
- SC SPLICE NEW TO EXISTING CONDUCTORS.
- AB ABANDONED
- RD REMOVE AND DISPOSE
- RS REMOVE AND SALVAGE

## WIRING DIAGRAM LEGEND:

- CB CIRCUIT BREAKER
- NB NEUTRAL BUS
- GB GROUND BUS
- ENCLOSURE BOND
- GROUNDING ELECTRODE
- CIRCUIT BREAKER
- RECEPTACLE

| REVISION NO. | DATE ISSUED | REMARKS |
|---|---|---|
| 2 | 3/26/10 | CMS EXPANSION, INDICATOR LIGHT CONTROL, CMS POWER |
| | | |
| | | |

# GENERAL NOTES, LEGEND, ABBREVIATIONS AND INDEX OF DRAWINGS (RICHMOND - SAN RAFAEL)

E-1

| SHEET | OF |
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| 1 | 17 |

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## PROJECT NOTES:

1. INSTALL NEW CAT-5e CABLE IN EXISTING CONDUIT.
2. INSTALL NEW CAT-5e CABLE.
3. INSTALL NEW TYPE 1 (¾") CONDUIT WITH 2 #12 AND 1 #12G (2) (120 V, CMS CABINET). ROUTE CONDUIT BELOW (E) CABLE TRAY AND PROVIDE CONDUIT SUPPORT.
4. (2) NOT USED
5. INSTALL NEW FOUR(4)15A-IP CIRCUIT BREAKERS (120 V, CMS SIGN) IN (E) SPACES 8,10,11 AND 12).
6. INSTALL TYPE 1 (1 1/2") CONDUIT WITH 8 #12 AND 4 #12G (120 V, CMS SIGNS).
7. INSTALL TYPE 4 (1 1/2") CONDUIT WITH 8 #12 AND 4 #12G (120 V, CMS SIGNS). ROUTE CONDUIT IN (E) CABLE TRAY AND (E) CEILING TO (E) EMERGENCY PANEL.
8. ROUTE CONDUIT WITH 8 #12 AND 4 #12G TO (E) CANOPY (CORE DRILL IS REQUIRED). SEAL AROUND CONDUIT PENETRATION WITH FAST-SETTING EPOXY RESIN THROUGH THE DEPTH OF HOLE.
9. INSTALL TYPE 1 (1 1/2") CONDUIT WITH 8 #12 AND 4 #12G (120 V, CMS SIGNS) AND ROUTE ABOVE CEILING TILE.
10. ALL WALL, CEILING AND FLOOR PENETRATIONS SHALL BE CORE-DRILLED AS DIRECTED AND APPROVED BY CALTRANS SUFFICIENTLY LARGE TO ACCOMMODATE CONDUIT PLUS FLUSH MOUNTED END BELL. ALL CORE-DRILLS SHALL BE MADE WATER-TIGHT, SEALED AROUND CONDUIT PER CALTRANS REQUIREMENTS WITH FAST-SETTING EPOXY RESIN THROUGHOUT THE DEPTH OF HOLE.
11. INSTALL NEW INDICATOR LIGHT CANOPY CABLE.
12. INSTALL NEW INDICATOR LIGHT BOOTH CABLE.
13. INSTALL NEW INDICATOR LIGHT CONSOLE CABLE.
14. INSTALL NEW CMS COMM CABLE.
15. (E) 1¼" C - 6 #12 & 4 #12G (120V, (E) CMS SIGNS)
16. INSTALL NEW EQUIPMENT RACK MOUNTABLE SHELF.
17. INSTALL NEW TYPE 4 (1½" C) CONDUIT.
18. CONTRACTOR TO RE-SEAL CONDUIT PENETRATION UP TO CANOPY.
19. (E) FDU TO REMAIN.
20. REMOVE AND DISPOSE OF EXISTING INDICATOR LIGHT CONTROL CABLE.
21. REMOVE AND DISPOSE OF EXISTING SPARE GREEEN, BLACK, & WHITE CABLES.
22. INSTALL NEW 8 #12 & 8 #12G (120V, CMS SIGNS).
23. ROUTE NEW CABLES THROUGH EXISTING CONDUIT.
24. MODIFY EXISTING GREEN INDICATOR LIGHT AND REPLACE WITH GREEN/FLASHING AMBER LED INDICATOR BULB. REPLACE EXISTING RED INDICATOR LIGHT WITH RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.
25. INSTALL NEW TYPE 2 (1 ½" C) CONDUIT.
26. REMOVE AND DISPOSE OF AS DIRECTED BY THE ENGINEER.
27. ROUTE NEW CMS COMM CABLE THROUGH EXISTING JUNCTION BOX.
28. (2) INSTALL NEW TYPE 1 (1 1/4"C) CONDUIT FOR BATA IT PERSONNEL.
29. INSTALL INDICATOR LIGHT SWITCH CONSOLE PANEL.
30. REMOVE EXISTING INDICATOR LIGHT SWITCH PANEL IN TOLL BOOTH.
31. INSTALL NEW CMS CONTROLLERS. ROUTE CAT-5E PATCH CABLES FROM EACH CMS CONTROLLER TO NEW ETHERNET SWITCH IN EXISTING CMS CABINET.
32. INSTALL NEW TYPE 1 (2" C) CONDUIT.
33. INSTALL NEW TYPE 2 (2" C) CONDUIT.
34. INSTALL TYPE 1 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
35. INSTALL NEW TYPE 1 (1½" C) CONDUIT.
36. INSTALL NEW 4X4X4 JUNCTION BOX
37. INSTALL NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP TO BE CONNECTED TO ETHERNET SWITCH.
38. INSTALL NEW TYPE 4 (2" C) CONDUIT
39. INSTALL AND TERMINATE INDICATOR LIGHT CABLES TO NEW TERMINAL BLOCKS AND WIRE TO SWITCH PANEL AS SHOWN IN PLANS AND APPROVED BY THE ENGINEER.
40. INSTALL L TYPE FITTING.
41. INSTALL NEW TOLL BOOTH LED PUSH BUTTON INDICATOR BOX.
42. INSTALL TYPE 2 (1½" C) CONDUIT WITH 8 #12 & 4 #12G (120V, CMS POWER).
43. INSTALL NEW TYPE 4 (1" C) CONDUIT.
44. INSTALL TYPE 3 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
45. INSTALL NEW CMS PANEL AS SPECIFIED IN CONTRACT DOCUMENTS.
46. INSTALL NEW 15A-1P CIRCUIT BREAKER (120V, CMS CONTROLLER) IN SPACE #42 TO MATCH (E).
47. PROVIDE NEW REVISED (TYPED WRITTEN) PANEL SCHEDULE.
48. (2) RE-FEED (E) CMS CABINET (120V) FROM (E) PANEL-STANDBY TO (E) PANEL-PB.
49. DISCONNECT AND SCRAP (E) BRANCH CIRCUIT FEEDER #14 (120V, CMS CONTROLLER).
50. INSTALL NEW TYPE 1 (¾" C) CONDUIT WITH 2 #12 & 1 #12G (2)
51. (2) REMOVE AND SCRAP (E) 2 #14 & 1 #14G TO (E) STANDBY PANEL (120V, CMS CABINET).
52. REPLACE EXISTING RED INDICATOR LIGHT WITH NEW RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.
53. INSTALL NEW TYPE 1 (3/4" C) CONDUIT WITH 3 #12 & 1 #12G, (CKT 6 & 12) FROM PANEL-PB TO (E) 4"X4"X4" WIRE GUTTER.
54. CONNECT NEW CIRCUITS (CKT 6 & 12) TO (E) TWO (2) SPARE 20A-1P BREAKERS #6 & #12.
55. (2) ROUTE NEW 3 #12 & 1 #12G (CKT 6 & 12) FROM (E) PANEL-PB TO (E) EQUIPMENT RACK #1 VIA (E) WIRE GUTTER
56. REPLACE (E) DUPLEX RECEPTACLE WITH NEW QUAD RECEPTACLE. DEVICE COLOR TO MATCH EXISTING.
57. INSTALL NEW QUAD RECEPTACLE TO (E) 4"X4" JUNCTION BOX DEVICE COLOR TO MATCH EXISTING.

# PROJECT NOTES (RICHMOND - SAN RAFAEL)

**E-2**

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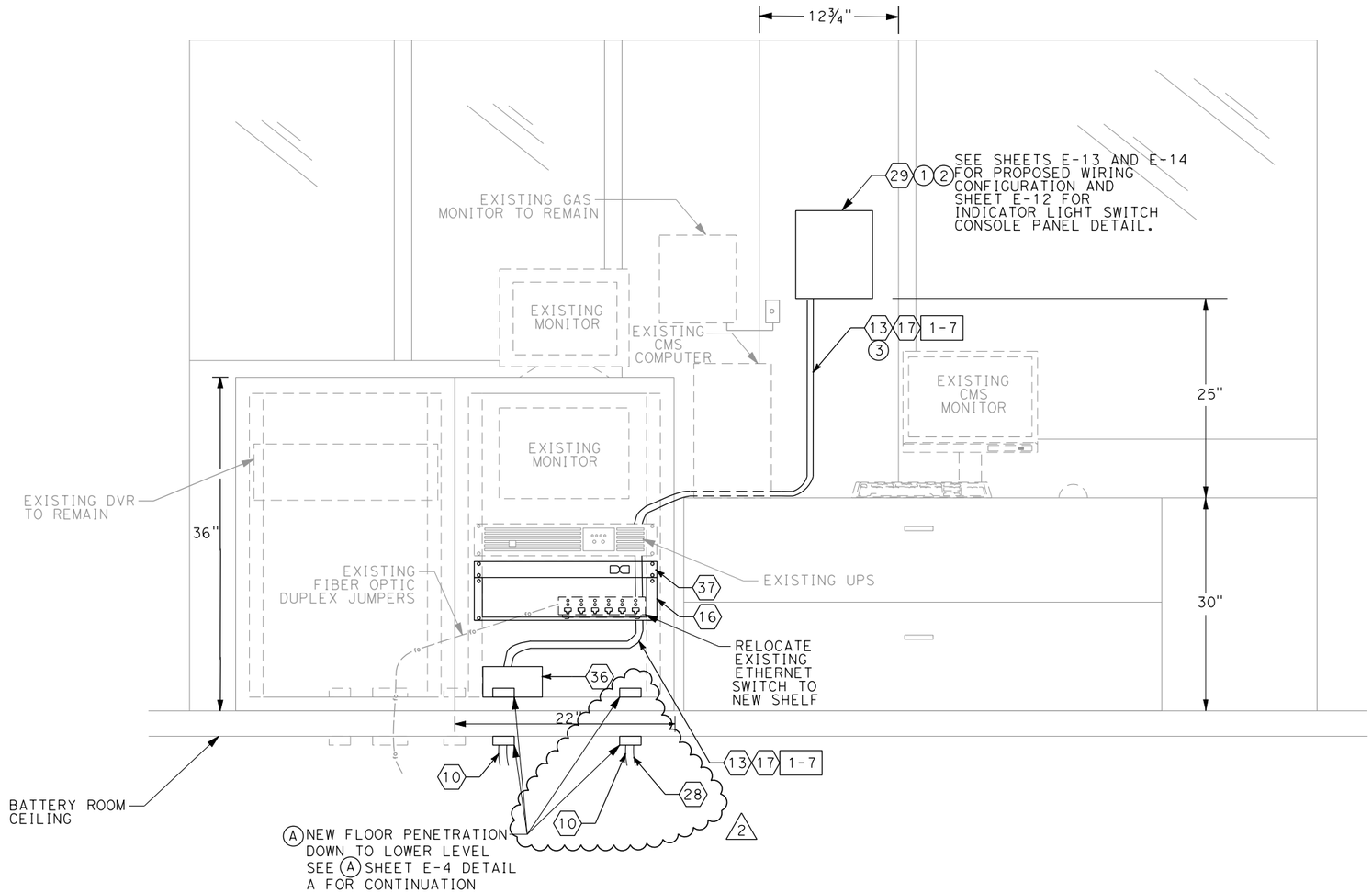
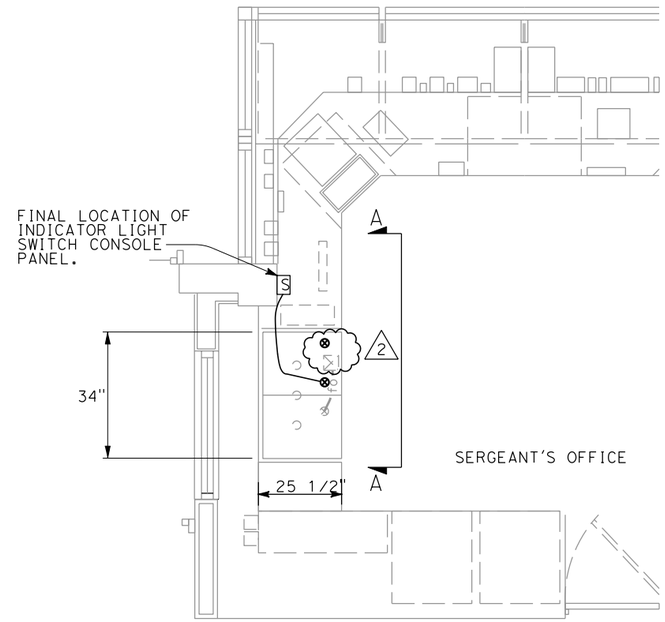
SHEET NOTES:

1. ANY EXISTING FURNITURE REQUIRED TO TO BE RE-ARRANGED FOR PLACEMENT OF INDICATOR LIGHT SWITCH CONSOLE PANEL SHALL BE COORDINATED WITH TOLL SERGEANT.
2. INDICATOR LIGHT SWITCH CONSOLE PANEL TO BE MOUNTED VERTICALLY TO EXISTING COLUMN.
3. CONTRACTOR TO ROUTE ALL CABLES TO INDICATOR LIGHT SWITCH CONSOLE PANEL. SECURE CONDUIT TO WALL WITH FITTINGS AND FASTENERS.




EXISTING CMS WORKSTATION DETAIL
SECTION A-A




MAIN FLOOR - PARTIAL FLOOR PLAN VIEW

# TOLL PLAZA OPERATIONS BUILDING
# PARTIAL MAIN FLOOR PLAN
# CONDUIT ROUTING
# (RICHMOND - SAN RAFAEL)

NO SCALE

**E-3**

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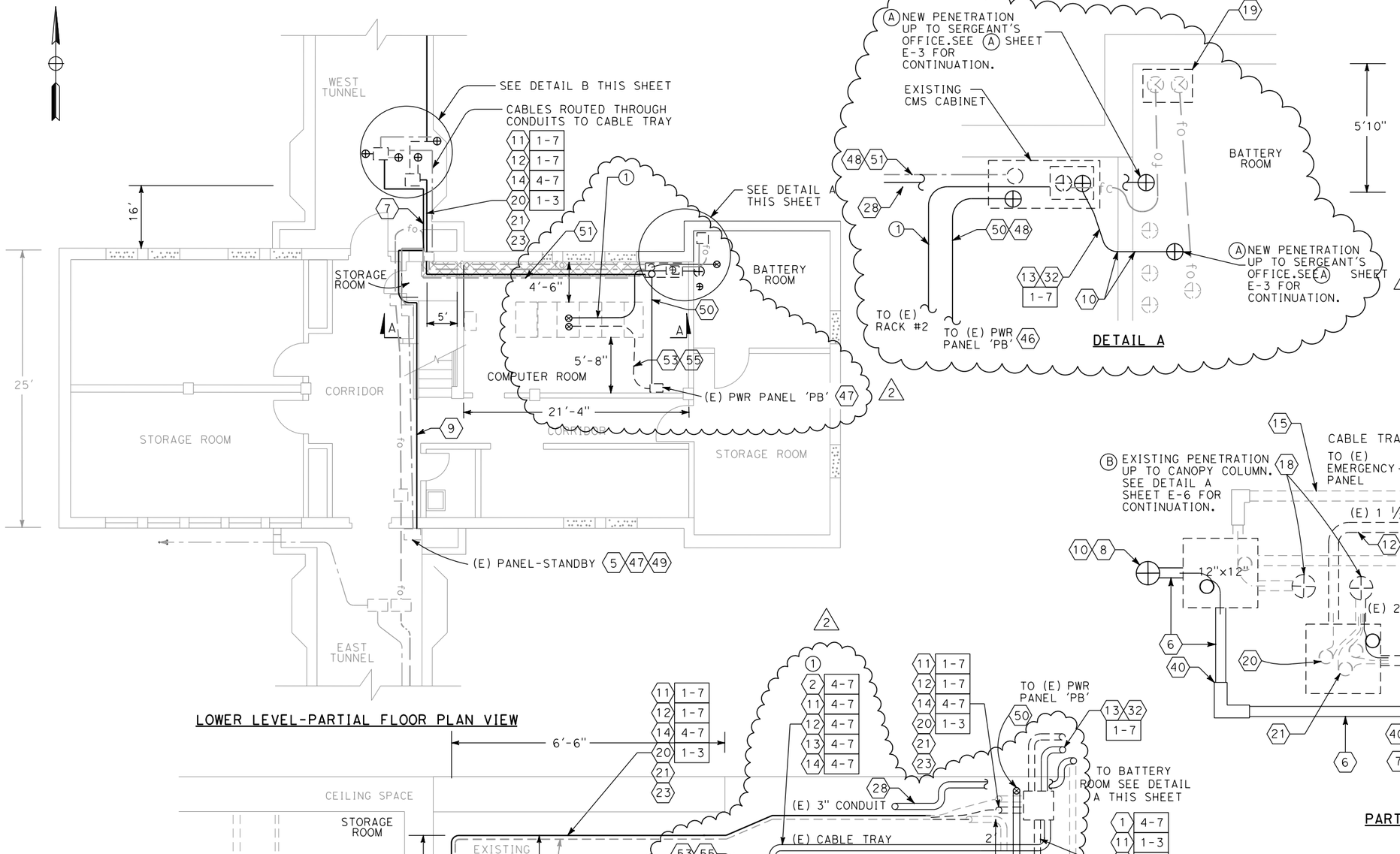


SHEET NOTES:

1. CONTRACTOR TO ROUTE COMMUNICATION CABLES ON EXISTING CABLE LADDER.

# TOLL PLAZA OPERATIONS BUILDING LOWER LEVEL CONDUIT ROUTING (RICHMOND - SAN RAFAEL)

NO SCALE

**E-4**

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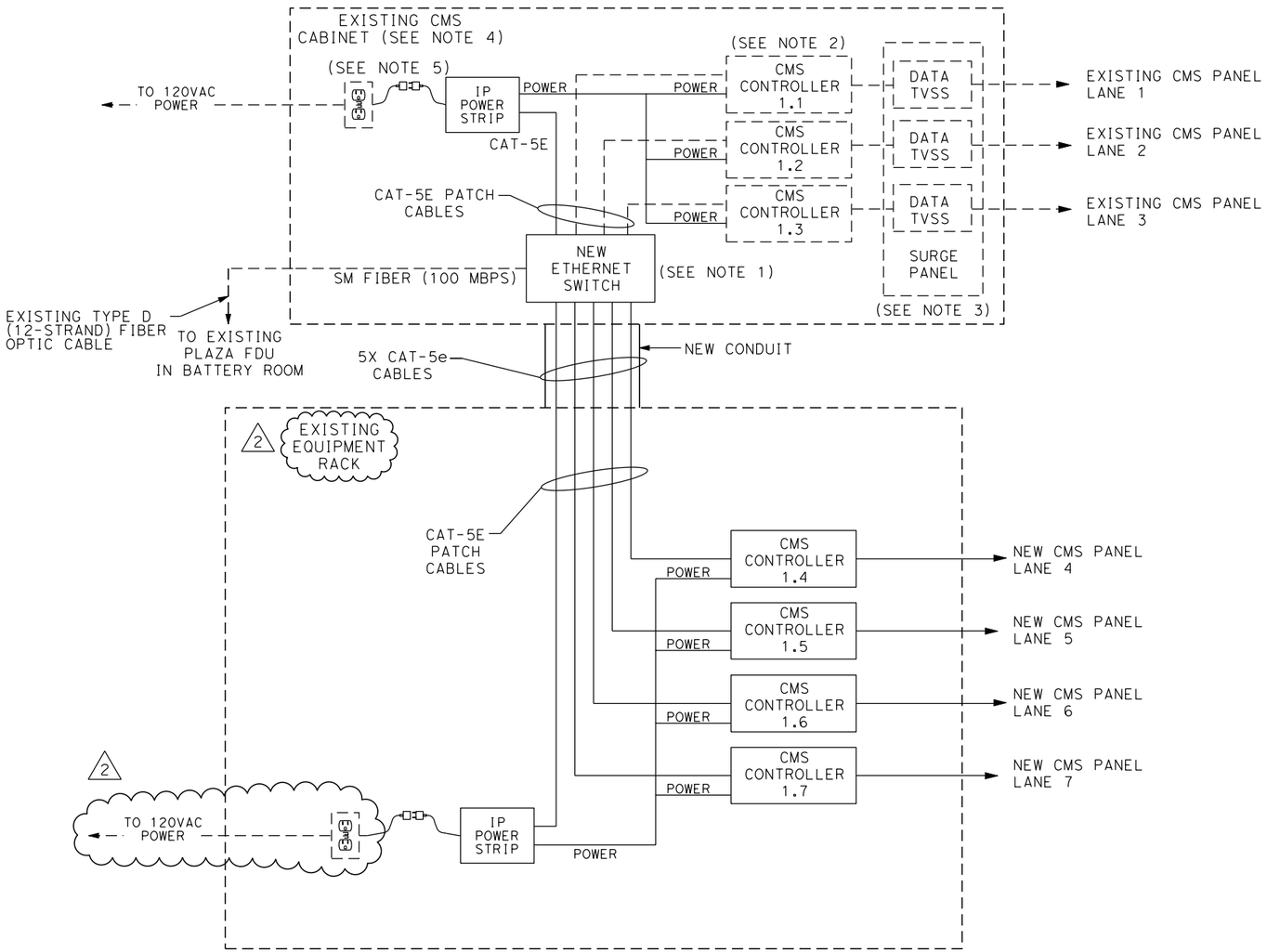


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SUITE 1500
SAN JOSE, CA 95113

NOTES:

1. EXISTING GARRETTCOM ETHERNET SWITCH LOCATED IN EXISTING CMS CABINET (LANES 1-3) SHALL BE RETURNED TO BATA AND REPLACED WITH NEW RACK MOUNTABLE SWITCH WITH MINIMUM 14-10/100 BASE-TX AND 2-100BASE-FX PORTS. FIBER PORTS TO MATCH EXISTING.
2. EXISTING CMS CONTROLLERS LOCATED IN EXISTING CMS CABINET (LANES 1-3) SHALL BE REPLACED WITH NEW CMS CONTROLLERS TO BE PROVIDED WITH INTERNAL SURGE PROTECTION PER MANUFACTURER'S SPECS.
3. EXISTING CMS TVSS TO BE REMOVED. OLD TVSS SHALL BE RETURNED TO BATA.
4. REPLACE EXISTING POWER STRIP WITH NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP.
5. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.

# CMS SYSTEM SCHEMATIC (RICHMOND-SAN RAFAEL)

NO SCALE

E-7

| SHEET | OF |
|---|---|
| 7 | 17 |

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| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 81 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

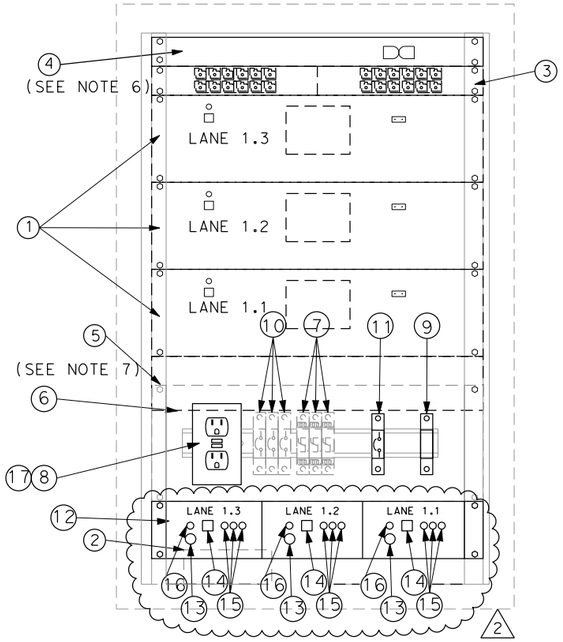
PLANS APPROVAL DATE

RAMSEY J. HISSEN
No. C-39608
Exp. 12/31/10
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA



BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
OAKLAND, CA 94607

URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113




PLAZA
CABINET #1

| ITEM | COMPONENT |
|---|---|
| ① | EXISTING CMS CONTROLLER TO BE REMOVED/REPLACED |
| ② | REMOVE EXISTING ETHERNET SWITCH AT CABINET BOTTOM. FURNISH AND INSTALL NEW RACK MOUNTABLE SWITCH WITH 14-10/100BASE-T AND 2-100BASE-FX(SM) PORTS. FIBER PORT TO MATCH EXISTING. INSTALL NEW SWITCH RIGHT UNDER CMS CONTROLLER (RACK MOUNTED-NO SHELVES). |
| ③ | EXISTING PLAZA PATCH PANEL |
| ④ | POWER STRIP TO BE REMOVED/REPLACED |
| ⑤ | EXISTING UPS TO BE REMOVED |
| ⑥ | EXISTING ELECTRICAL PANEL |
| ⑦ | EXISTING DATA TVSS TO BE REMOVED |
| ⑧ | INSTALL NEW 15 AMP GFI OUTLET |
| ⑨ | REMOVE EXISTING TRANSFORMER AND REPLACE WITH ONE (1)NEW 120V,100W, 1:1, NEC TYPE 3 TRANSFORMER. |
| ⑩ | REMOVE EXISTING 1/4 AMP BREAKERS |
| ⑪ | ONE (1) NEW 2 AMP BREAKER (120 VAC) |
| ⑫ | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. |
| ⑬ | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| ⑭ | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| ⑮ | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| ⑯ | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120 VAC) FOR POWER INDICATION. |
| ⑰ | REMOVE EXITING 15 AMP OUTLET |

DETAIL A
EXISTING TOLL PLAZA CABINET ELEVATION

NOTES:

1. EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS.
2. ALL REMOVED EQUIPMENT AND MATERIALS SHALL BE COORDINATED WITH BATA.
3. CONTRACTOR TO REMOVE EXISTING TYPE 3 TRANSFORMER FROM PLAZA CABINETS.
4. CONTRACTOR TO REMOVE EXISTING 1/4 AMP BREAKERS.
5. EXISTING CMS TVSS TO BE REMOVED AND SALVAGE. CONTROLLER TO BE PROVIDED WITH INTERNAL SURGE PROTECTION PER MANUFACTURER'S SPECS.
6. EXISTING POWER STRIP TO BE REPLACED WITH NEW IP ADDRESSABLE RACK MOUNTABLE POWER STRIP. CONTRACTOR TO CONNECT ETHERNET CABLE TO NEW SWITCH.
7. EXISTING UPS TO BE REMOVED AND RETURNED TO BATA CONTRACTOR TO CONNECT CMS CONTROLLERS TO PANEL 'PB' UPS POWER.
8. ALL CABLING IN CMS CABINETS SHALL BE INSTALLED AND NEATLY DRESSED AND SECURED IN CABINETS. SPARE COILED CABLING SHALL BE PROVIDED IN JUNCTION BOXES.
9. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS (I.E., TRANSFORMERS, BREAKERS, ETC.).
10. EXISTING CMS CONTROLLER TO BE REPLACED WITH NEW CONTROLLER. NEW CMS CONTROLLER TO BE PROVIDED BY BATA.
11. CONTRACTOR TO LEAVE ONE (1) RACK UNIT OF SPACE AT BOTTOM OF CABINET.
12. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.

# CMS PLAZA CABINET ELEVATION VIEW FOR LANES 1-3 (RICHMOND-SAN RAFAEL) E-8

NO SCALE

| SHEET | OF |
|---|---|
| 8 | 17 |

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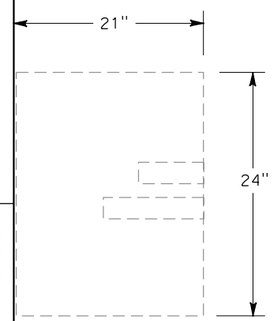
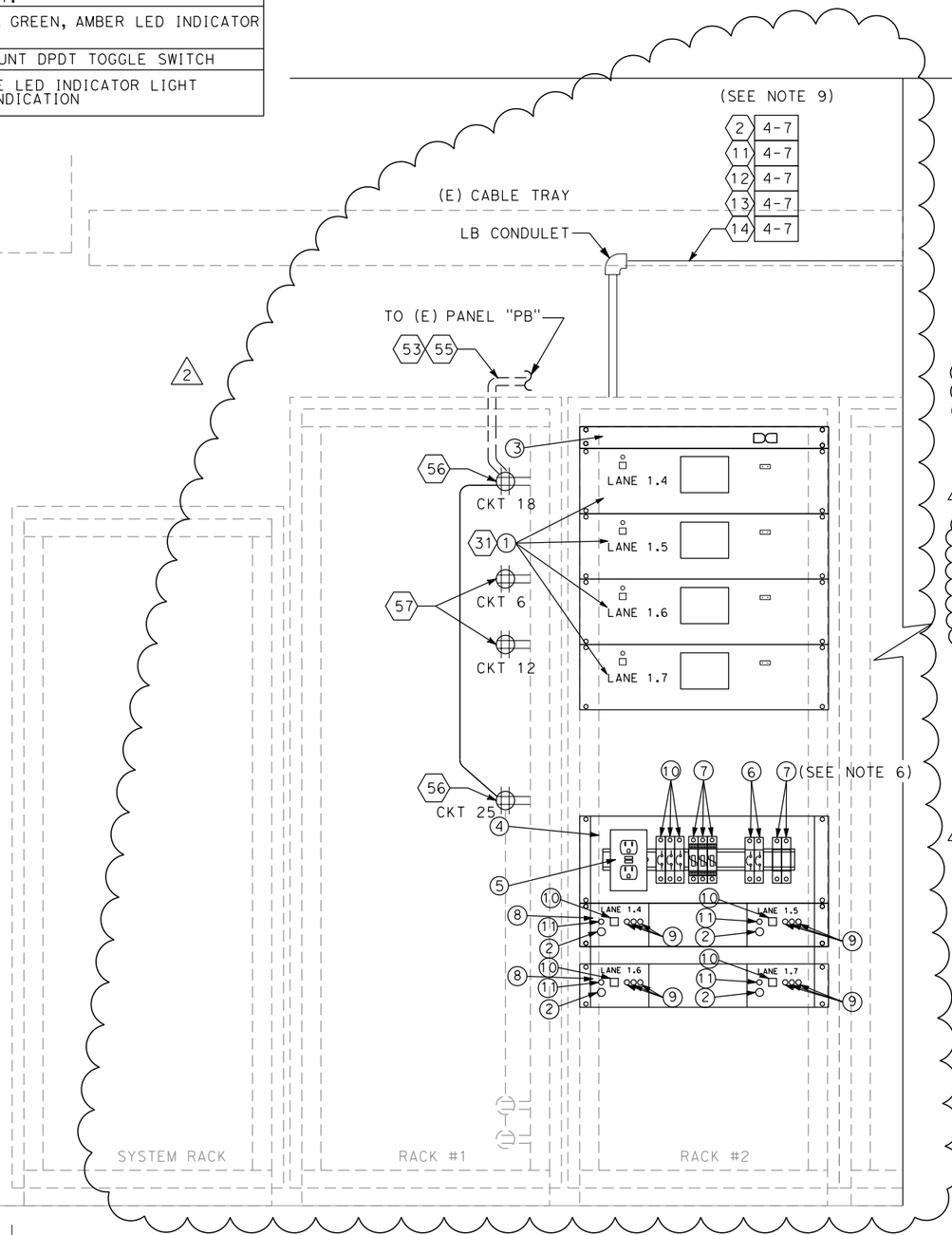
| ITEM | COMPONENT |
|---|---|
| ① | NEW CMS CONTROLLER |
| ② | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| ③ | NEW IP ADDRESSABLE POWER STRIP |
| ④ | NEW ELECTRICAL PANEL |
| ⑤ | NEW 15 AMP GFI OUTLET |
| ⑥ | TWO (2) NEW 2 AMP BREAKER (120 VAC) |
| ⑦ | TWO (2) NEW CLASS 3, 100 WATT 1:1, 120 VAC TRANSFORMERS |

| ITEM | COMPONENT |
|---|---|
| ⑧ | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. SEE SHEET E-17 FOR CABINET DRAWER LAYOUT. |
| ⑨ | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| ⑩ | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| ⑪ | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |

NOTE: CABINET AND EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS




6'

COMPUTER ROOM

## SHEET NOTES:

1. ANY EXISTING EQUIPMENT REQUIRED TO BE RE-ARRANGED FOR PLACEMENT OF CMS EQUIPMENT RACK SHALL BE COORDINATED WITH BATA IT PERSONNEL. (2)
2. SECURE CONDUIT TO EXISTING CABLE TRAY USING CONDUIT CLAMPS OR CHANNEL STRUTS. (2) SEE SHEET E-15 FOR TYP CONDUIT MOUNTING.
3. ALL CABLING IN CMS EQUIPMENT RACK SHALL BE INSTALLED AND NEATLY DRESSED AND SECURED IN CABINETS. SPARE COILED CABLING SHALL BE PROVIDED IN JUNCTION BOXES.
4. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS EQUIPMENT RACK(I.E., TRANSFORMERS, BREAKERS, ETC.).
5. NEW IP ADDRESSABLE POWER STRIP TO BE RACK MOUNTABLE.
6. CONTRACTOR TO CONNECT TWO (2) LANES TO ONE TRANSFORMER AND TWO (2) LANES TO THE OTHER TRANSFORMER.
7. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET. (2)
8. EXISTING EQUIPMENT ON RACK #2 WILL BE RELOCATED TO RACK #1 BY OTHERS.
9. CONTRACTOR TO ROUTE COMMUNICATION CABLES ON EXISTING CABLE LADDER.

# CMS EQUIPMENT RACK LAYOUT FOR LANES 4-7 (RICHMOND - SAN RAFAEL)

NO SCALE

E-9

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 82 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp.12/31/10 CIVIL — STATE OF CALIFORNIA

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BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
OAKLAND, CA 94607

URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113


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BORDER LAST REVISED 2/1/2008

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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DGN FILE => $REQUEST

CU 00000

EA TBD (BATA-0006)

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 83 | 123 |

Carol Light
REGISTERED CIVIL ENGINEER — 3/12/10 DATE

REGISTERED PROFESSIONAL ENGINEER
CAROL LIGHT
No. 10145
Exp. 09/30/11
ELECTRICAL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

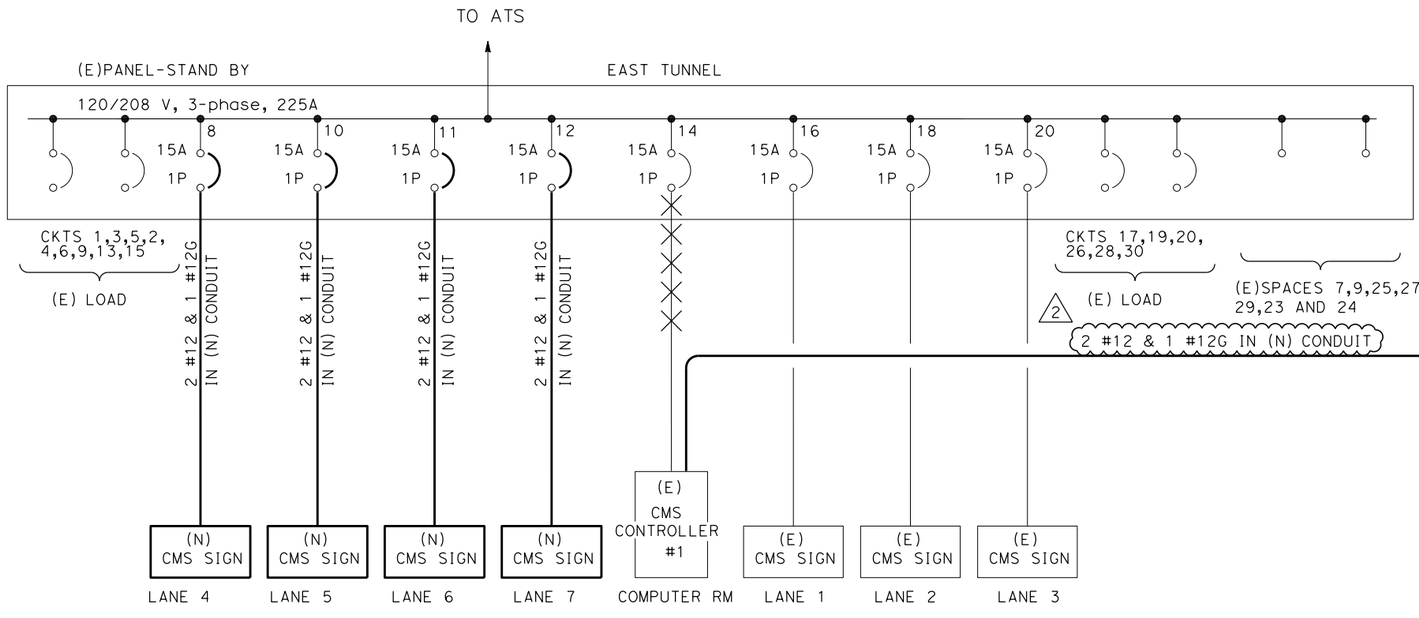


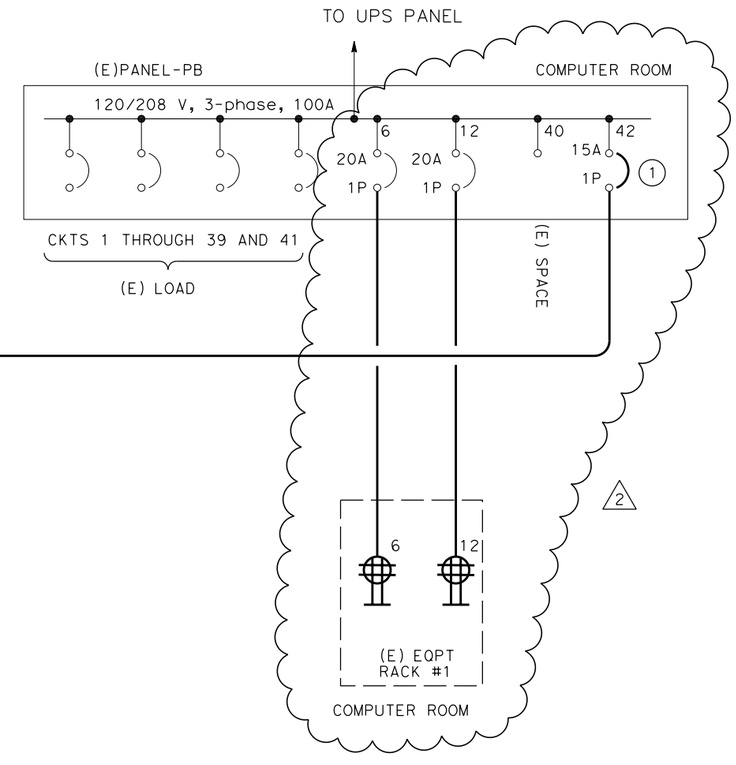
BAY AREA TOLL AUTHORITY
101 EIGHTH STREET
OAKLAND, CA 94607

URS CORPORATION
55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113

NOTES:

1. INSTALL NEW CIRCUIT BREAKER IN EXISTING SPACE.
2. THE CMS CABINET AND SIGNS SHALL BE CONNECTED TO THE BUILDING GROUNDING SYSTEM BY THE EQUIPMENT GROUND CONDUCTOR IN EACH CONDUIT.
3. ALL METAL PARTS OF THE SYSTEM SHALL BE BONDED TOGETHER PER CONTRACT SPECIFICATIONS.




# PARTIAL ONE LINE DIAGRAM (RICHMOND - SAN RAFAEL)

NO SCALE

**E-10**

| SHEET | OF |
|---|---|
| 10 | 17 |

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| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 84 | 123 |

Carol Light — REGISTERED CIVIL ENGINEER — 3/12/10 DATE

REGISTERED PROFESSIONAL ENGINEER — CAROL LIGHT — No. 10145 — Exp. 09/30/11 — ELECTRICAL — STATE OF CALIFORNIA

PLANS APPROVAL DATE

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55 S. MARKET STREET
SUITE 1500
SAN JOSE, CA 95113

NOTES:

(1) CONTRACTOR TO UPDATE BREAKER PANEL BOARD SCHEDULE AND PROVIDE A NEW TYPED WRITTEN PANEL BOARD SCHEDULE.

## (E) STANDBY PANEL

PROJECT: BATA TO12 TOLL PLAZAS CMS
RICHMOND/ SAN RAFAEL BRIDGE

LOCATION: EAST TUNNEL

| LOAD DESCRIPTION | LTG. | G.P. REC | OTH. | CB AMP | CB POLE | | | | CB AMP | CB POLE | LTG. | G.P. REC | OTH. | LOAD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (E) NEON SIGN | | | | 30 | | 1 | A | 2 | 100 | | | | | (E) TOLL BOOTH LIGHTING |
| ABUTMENT FLASHER | | | | | | 3 | B | 4 | | | | | | (E) TOLL BOOTH LIGHTING |
| | | | | | 3 | 5 | C | 6 | | 3 | | | | (E) TOLL BOOTH LIGHTING |
| (E) SPACE | | | | | 1 | 7 | A | 8 | 15 | 1 | | | 0.50 | (N) CMS SIGN LN 4 |
| (E) SPACE | | | | | 1 | 9 | B | 10 | 15 | 1 | | | 0.50 | (N) CMS SIGN LN 5 |
| (N) CMS SIGN LN 6 | | | 0.50 | 15 | 1 | 11 | C | 12 | 15 | 1 | | | 0.50 | (N) CMS SIGN LN 7 |
| (E) NORTH TUNNEL LTS | | | | 20 | 1 | 13 | A | 14 | 15 | 1 | | | | (N) SPARE |
| (E) ELEC. DOOR | | | | 20 | 1 | 15 | B | 16 | 15 | 1 | | | | (E) CMS SIGN #1 |
| (E) SPACE | | | | | 1 | 17 | C | 18 | 15 | 1 | | | | (E) CMS SIGN #3 |
| (E) WAD | | | | 50 | | 19 | A | 20 | 15 | 1 | | | | (E) CMS SIGN #2 |
| (E) WAD | | | | | | 21 | B | 22 | | | | | | (E) SPACE |
| (E) WAD | | | | | 3 | 23 | C | 24 | | | | | | (E) SPACE |
| (E) SPACE | | | | | 1 | 25 | A | 26 | 40 | | | | | (E) UPS |
| (E) SPACE | | | | | 1 | 27 | B | 28 | | | | | | |
| (E) SPACE | | | | | 1 | 29 | C | 30 | | 3 | | | | |
| | | | | | | | | 32 | 125 | | | | | (E) PANEL UPS |
| | | | | | | | | 34 | | | | | | |
| | | | | | | | | 36 | | 3 | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| TOTALS SECTION 1 | 0.00 | 0.00 | 0.50 | | | | | | | | 0.00 | 0.00 | 1.50 | |

| VOLTAGE: 120/208V | LOAD SUMMARY | | | BALANCE: | (KVA) | % | AMPS: | ADDITIONAL FEATURES: |
|---|---|---|---|---|---|---|---|---|
| PHASE/WIRE: 3 PHASE / 4 WIRE | CONNECT LOAD | DEMAND FACTOR | DEMAND LOAD | PHASE A: | 0.50 | 25.00 | 1.39 | |
| RATING: 225A | 0.00 | 125% OF LOAD | 0.00 | PHASE B: | 0.50 | 25.00 | 1.39 | |
| MAINS: 225A- 3P | 0.00 | NEC 220-13 | 0.00 | PHASE C: | 1.00 | 50.0 | 2.78 | |
| MOUNTING: | 2.00 | 1.00 | 2.00 | | | | | |
| A.I.C.: | 2.00 KVA | | 2.00 KVA | | | | | |
| BUS SIZE: | 5.6 AMPS | | 5.6 AMPS | | | | | S&L JOB #: 28016 |

## (E) PANEL PB

PROJECT: BATA TO12 TOLL PLAZA CMS
RICHMOND/ SAN RAFAEL BRIDGE

LOCATION: COMPUTER ROOM

| LOAD DESCRIPTION | LTG. | G.P. REC | OTH. | CB AMP | CB POLE | | | | CB AMP | CB POLE | LTG. | G.P. REC | OTH. | LOAD DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 1 | A | 2 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 3 | B | 4 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 5 | C | 6 | 20 | 1 | | 0.54 | | (N) RECEPT-RACK #1 EQPT (2) |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 7 | A | 8 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 9 | B | 10 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 11 | C | 12 | 20 | 1 | | 0.54 | | (N) RECEPT-RACK #1 EQPT (2) |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 13 | A | 14 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 15 | B | 16 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 17 | C | 18 | 20 | 1 | | | | (E) COMPUTER RACK EQPT |
| (E) COMPUTER RACK EQPT | | | | 20 | 1 | 19 | A | 20 | 20 | 1 | | | | (E) COMPUTER RACK #1 EQPT |
| (E) VDS RELAY PANEL | | | | 20 | 1 | 21 | B | 22 | 20 | 1 | | | | (E) COMPUTER RACK #2 EQPT. OUTLETS |
| (E) VDS RELAY PANEL | | | | 20 | 1 | 23 | C | 24 | 20 | 1 | | | | (E) RACK EQPT. OUTLETS (2) |
| (E) VDS RELAY PANEL | | | | 20 | 1 | 25 | A | 26 | 20 | 1 | | 0.35 | | (E) RECEPT- CAPTAIN'S OFFICE |
| (E) VDS RELAY PANEL | | | | 20 | 1 | 27 | B | 28 | 20 | 1 | | | | (E) SPARE |
| (E) FIRE ALARM PANEL | | | 0.20 | 20 | 1 | 29 | C | 30 | 20 | 1 | | 0.35 | | (E) RECEPT- SGT OFFICE |
| (E) FIRE DAMPER | | | 0.10 | 20 | 1 | 31 | A | 32 | 20 | 1 | | | | (E) RECEPT- OPERATION CTR. |
| | | | | 20 | 1 | 33 | B | 34 | 20 | 1 | | | | (E) RECEPT- UPS STORAGE ROOM |
| | | | | 20 | 1 | 35 | C | 36 | 20 | 1 | | | | (E) UNKNOWN LOAD |
| | | | | 20 | 1 | 37 | A | 38 | 20 | 1 | | | | (E) UNKNOWN LOAD (2) |
| | | | | 20 | 1 | 39 | B | 40 | | 1 | | | | (E) SPACE |
| | | | | 20 | 1 | 41 | C | 42 | 15 | 1 | | | 0.60 | (E) CMS CAB #1 |
| TOTALS SECTION 1 | 0.00 | 0.00 | 0.30 | | | | | | | | 0.00 | 1.80 | 0.60 | |

| VOLTAGE: 120/208V | LOAD SUMMARY | | | BALANCE: | (KVA) | % | AMPS: | ADDITIONAL FEATURES: |
|---|---|---|---|---|---|---|---|---|
| PHASE/WIRE: 3 PHASE / 4 WIRE | CONNECT LOAD | DEMAND FACTOR | DEMAND LOAD | PHASE A: | 0.46 | 17.04 | 1.28 | |
| RATING: 225A | 0.00 | 125% OF LOAD | 0.00 | PHASE B: | 0.00 | 0.00 | 0.00 | |
| MAINS: MAIN LUG ONLY | 1.80 | NEC 220-13 | 1.80 | PHASE C: | 2.24 | 82.96 | 6.22 | |
| MOUNTING: SURFACE | 0.90 | 1.00 | 0.90 | | | | | |
| A.I.C.: | 2.70 KVA | | 2.70 KVA | | | | | |
| BUS SIZE: 225A | 7.5 AMPS | | 7.5 AMPS | | | | | S&L JOB #: 28016 |

# STANDBY AND PB PANELBOARD SCHEDULES (RICHMOND - SAN RAFAEL)

NO SCALE

E-11

| SHEET | OF |
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| 11 | 17 |

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| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 86 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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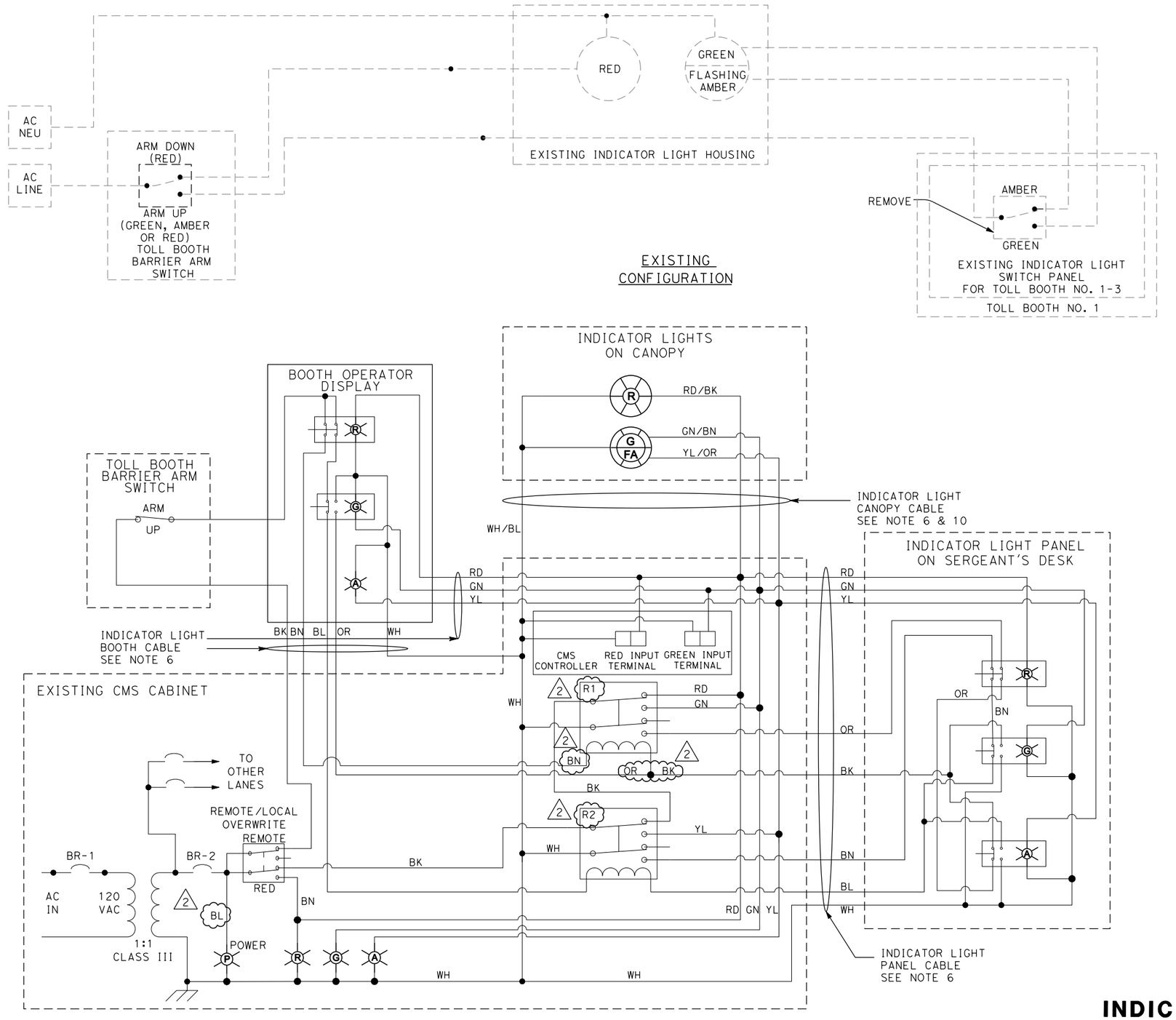


## LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- CMS CABINET TERMINAL BLOCK X-B
  X = LANE NUMBER
  B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 8)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)

## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-12 FOR INDICATOR LIGHT SWITCH CONSOLE DETAIL.
3. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
4. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP.
5. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
6. BELDEN 5506UE CABLE OR APPROVED EQUIVALENT.
7. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
8. ONE (1) ½ AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) ½ AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 CMS CONTROLLERS.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 1-3 (RICHMOND - SAN RAFAEL)

NO SCALE

E-13

| SHEET | OF |
|---|---|
| 13 | 17 |

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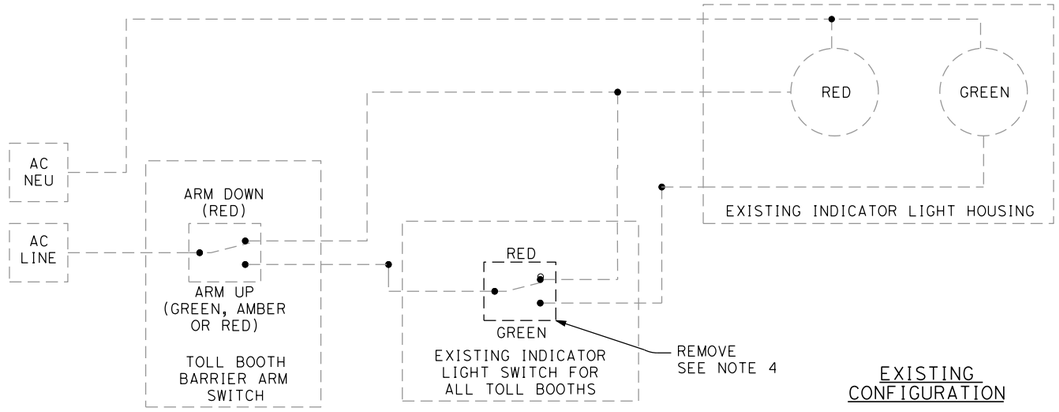


EXISTING CONFIGURATION

NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-12 FOR INDICATOR LIGHT SWITCH CONSOLE DETAIL.
3. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
4. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
5. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
6. BELDEN 5506UE CABLE OR APPROVED EQUIVALENT.
7. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
8. ONE (1) ½ AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) ½ AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 CMS CONTROLLERS.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHT CANOPY.

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 87 | 123 |

REGISTERED CIVIL ENGINEER — DATE 3/12/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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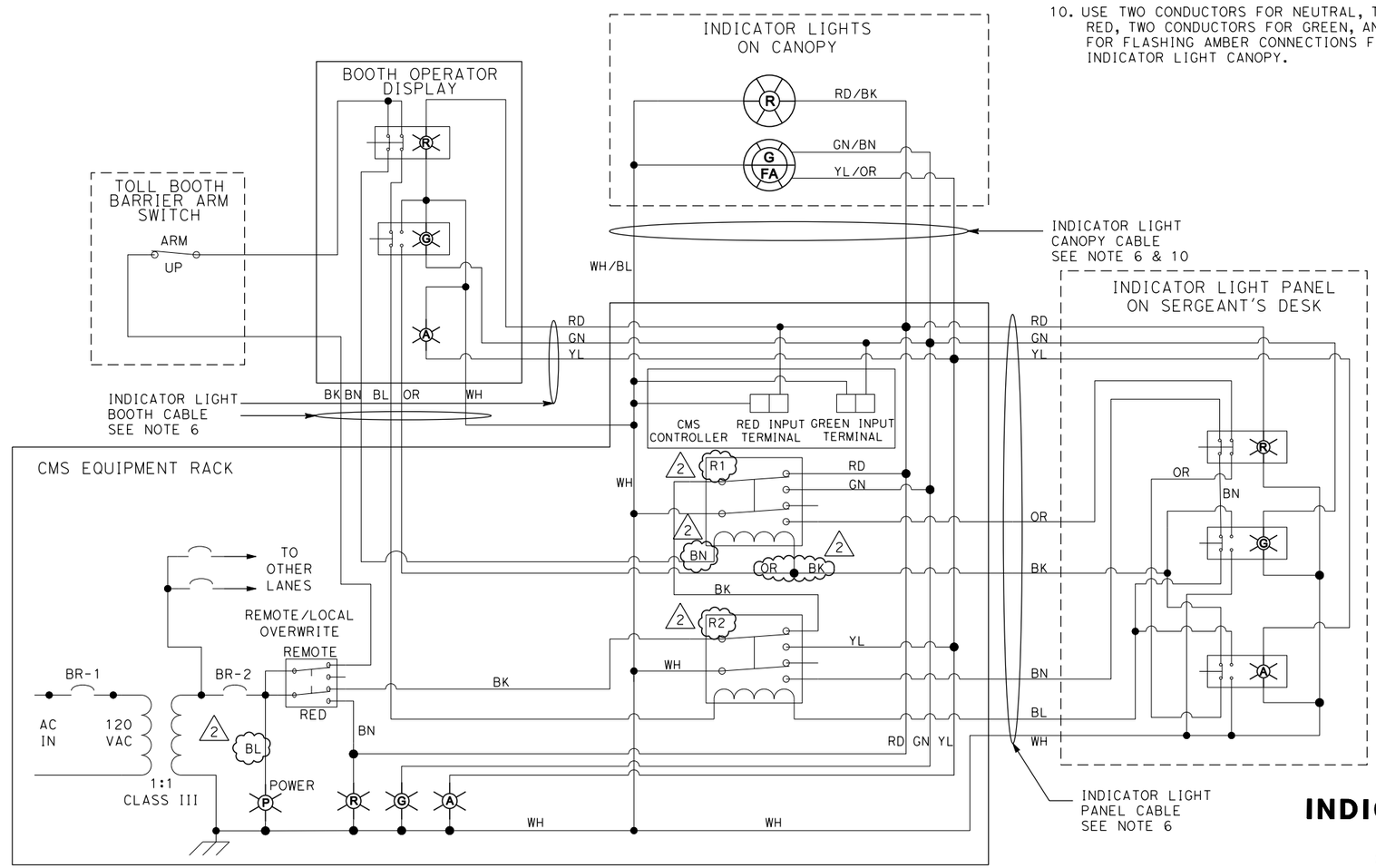
SAN JOSE, CA 95113




PROPOSED CONFIGURATION

LEGEND

| | |
|---|---|
| G | GREEN INDICATOR LED LIGHT, 120 VAC |
| A | AMBER INDICATOR LED LIGHT, 120 VAC |
| R | RED INDICATOR LED LIGHT, 120 VAC |
| FA | FLASHING AMBER LED LIGHT, 120 VAC |
| • | CMS CABINET TERMINAL BLOCK X-B<br>X = LANE NUMBER<br>B = TERMINAL BLOCK NUMBER |
| BR-1 | 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET) |
| BR-2 | ½ AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 8) |
| | CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9) |
| | BREAKER |
| | CANOPY LED INDICATOR |
| | DPDT SWITCH |
| | DPDT RELAY |
| | NC + NC PUSH BUTTON SWITCH W/ INDICATOR |
| | NC + NO PUSH BUTTON SWITCH W/ INDICATOR |
| | PANEL MOUNT LIGHT INDICATOR (120 VAC) |

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 4-7 (RICHMOND - SAN RAFAEL)

NO SCALE

E-14

| SHEET | OF |
|---|---|
| 14 | 17 |

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| ITEM | COMPONENT |
|---|---|
| 1 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 2 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| 3 | 6 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT CANOPY CABLE AND POWER |
| 4 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 5 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. |
| 6 | TWO (2) NEW DPDT RELAYS |
| 7 | DRILLED HOLES AT BOTTOM OF DRAWER FOR INDICATOR LIGHT CABLES WITH RUBBER GROMMETS. |
| 8 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 9 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT BOOTH CABLE |
| 10 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT PANEL CABLE |

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | CC | 580 | 6.13 | 90 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

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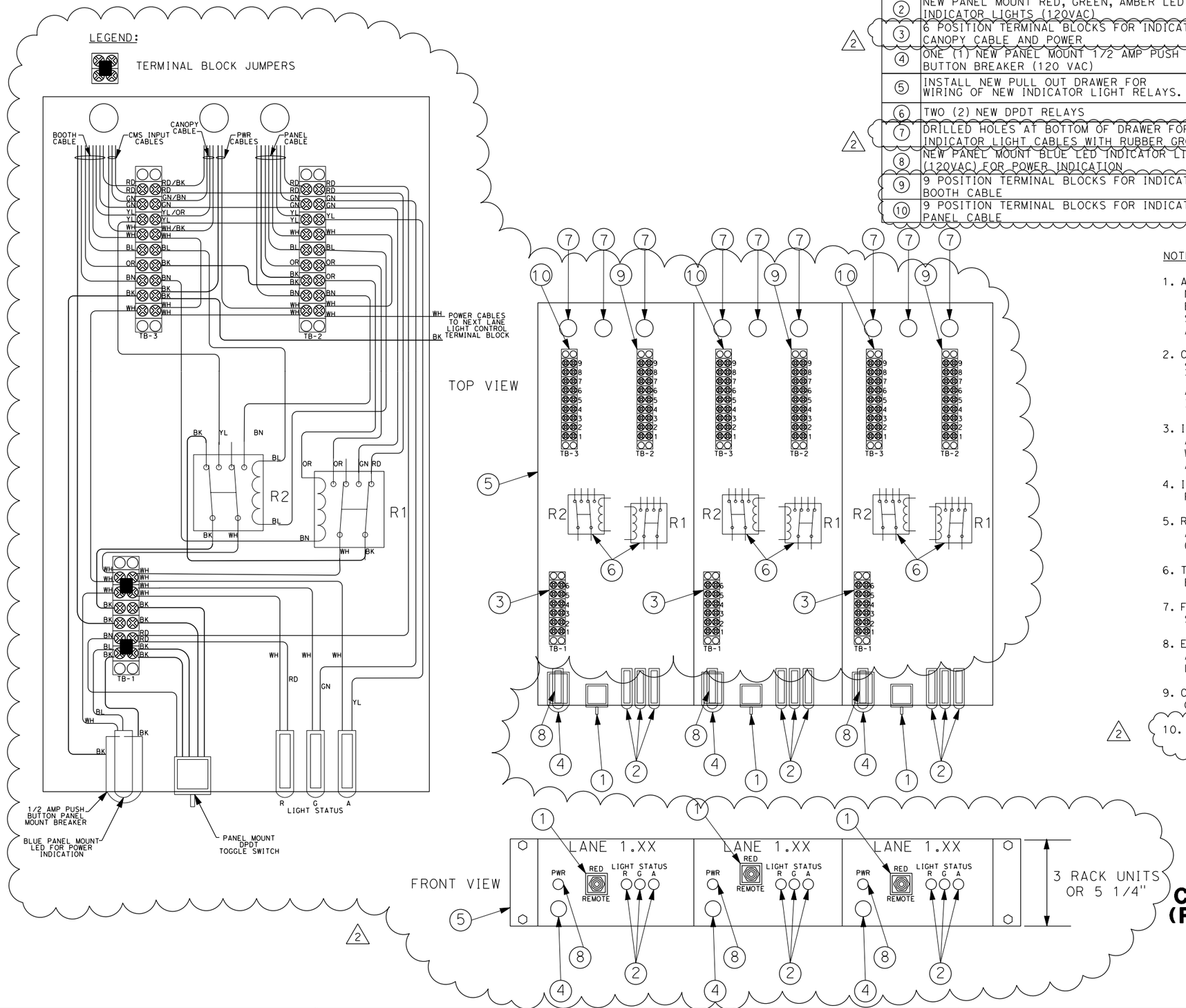


NOTES:

1. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
2. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
3. INDICATOR LIGHT CABLES TO BE WIRED ACCORDING TO THE INDICATOR LIGHT WIRING DIAGRAM AS SHOWN ON SHEETS E-13 AND E-14.
4. INDICATOR LIGHT DRAWER LAYOUT SHOWN FOR TYPICAL CMS CABINET.
5. ROUTE ALL CABLES THROUGH DRILLED HOLES AT BOTTOM OF DRAWER. INCLUDE PLASTIC GROMMETS IN HOLE.
6. TERMINATE ALL CABLES ON NEW TERMINATION BLOCKS.
7. FASTEN ALL CABLES TO DRAWER TO PREVENT STRAINING ON TERMINATION BLOCKS.
8. EACH CABINET DRAWER SHALL BE DESIGNED TO ACCOMMODATE UP TO FOUR (4) INDICATOR CONTROL LANES.
9. CONTRACTOR TO LEAVE AT LEAST ONE RACK UNIT OF SPACE BETWEEN DRAWER AND BOTTOM OF CABINET.
10. USE TERMINAL LUGS FOR ALL CABLE CONNECTIONS TO TERMINAL BLOCKS.

# INDICATOR LIGHT CABINET DRAWER LAYOUT (RICHMOND - SAN RAFAEL)

NO SCALE

**E-17**

| SHEET | OF |
|---|---|
| 17 | 17 |

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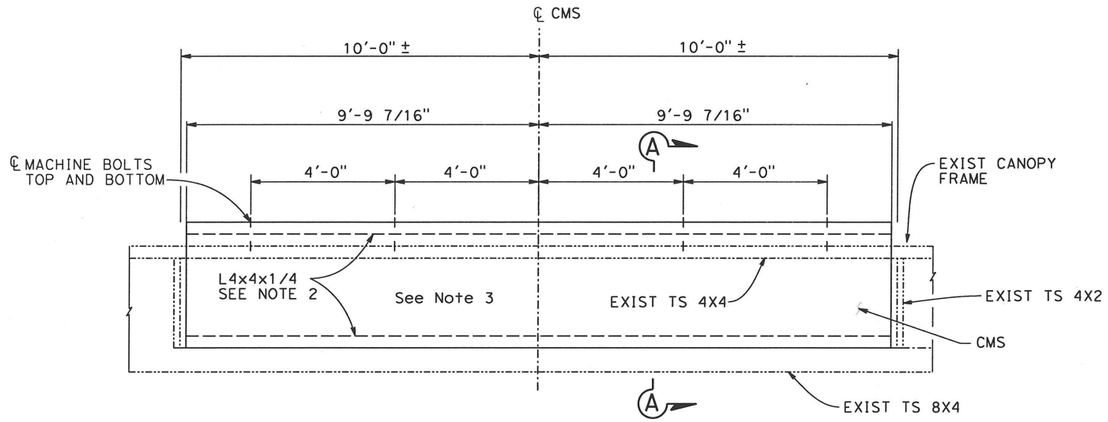
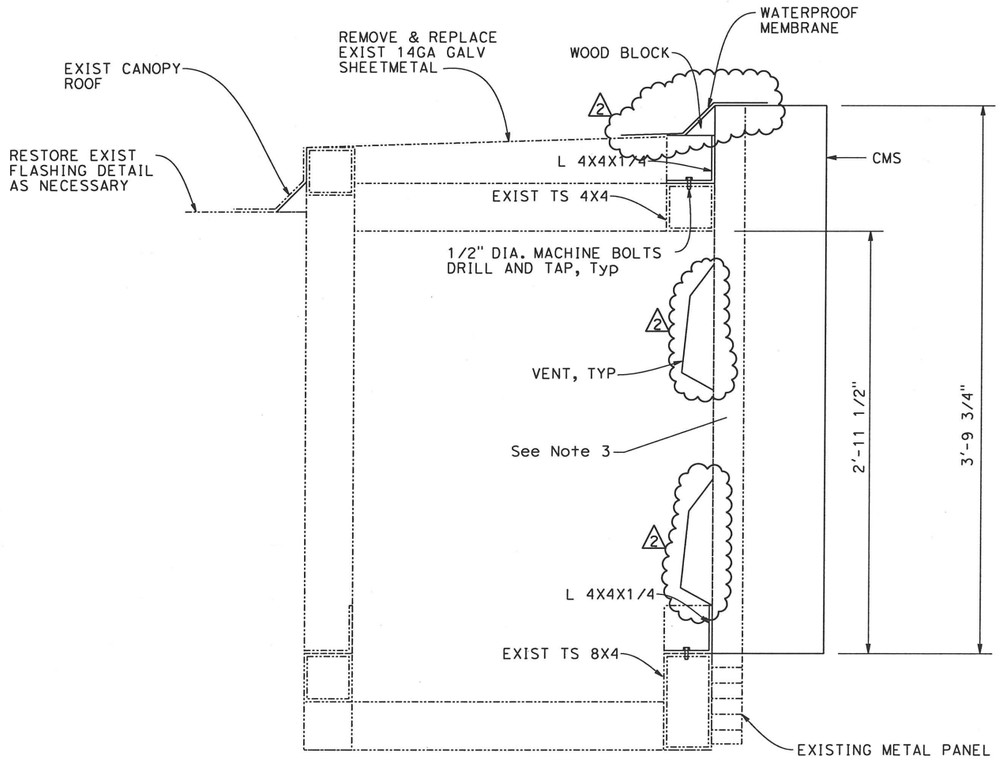



## CMS SUPPORT ELEVATION

SCALE: 1/2" = 1'-0"




## SECTION A-A

SCALE: 2" = 1'-0"

Note:
The Contractor shall verify all controlling field dimensions before ordering or fabricating any material.

| ADDENDUM NO. | DATE ISSUED | REMARKS |
|---|---|---|
| 2 | 03/26/10 | UPDATE DETAIL |

Notes:

1. For location and number of new CMS panels, see layout sheet L-11.
2. The angle sections are part of the CMS panel.
3. Remove existing CMS, curtains, sliding screen carrier, track and corner glide, etc., prior to installing new CMS.

Legend:

———— Indicates New Structure

- - - - - - - - - - Indicates Exist Structure

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 80 | 1.99 | 91 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GUOPING XU — No. C 63977 — Exp. 09/30/10 — CIVIL — STATE OF CALIFORNIA

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101 EIGHTH STREET
OAKLAND, CALIFORNIA 94607

MGE ENGINEERING, INC.
7415 GREENHAVEN DRIVE, SUITE 100
SACRAMENTO, CALIFORNIA 95831

DESIGN OVERSIGHT

SIGN OFF DATE

DESIGN DETAIL SHEET (ENGLISH) (REV. 2/25/05)

| | BY | CHECKED |
|---|---|---|
| DESIGN | G. Xu | |
| DETAILS | E. Garnica | |
| QUANTITIES | | |

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

Guoping Xu
PROJECT ENGINEER

CU
EA

BRIDGE NO.

POST MILE 1.99

# SFOBB TOLL PLAZA
## CMS SUPPORT

SHEET S-1

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY): 03/12/10

SHEET 1 OF 1

FILE => ...\Structural\Structual_CMS-1.dgn

USERNAME => Florin_Logan@MGE PLOTTED => 3/26/2010 TIME PLOTTED => 12:21:48 PM

## GENERAL NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE LATEST VERSION OF THE CALTRANS STANDARD PLAN AND SPECIFICATIONS.
2. CALL UNDERGROUND SERVICE ALERT 48 HOURS BEFORE EXCAVATION U.S.A. (800) 277-2600.
3. ALL ELECTRICAL AND CMS EQUIPMENT, INFRASTRUCTURE, LANDSCAPING OR BUILDINGS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
4. ALL ELECTRICAL AND CMS EQUIPMENT INCLUDING CONDUITS, JUNCTION AND SPLICE EQUIPMENT RACK ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.
5. SERVICE EQUIPMENT, AND CMS CABINET ENCLOSURES, CONTROLLER ASSEMBLIES, CMS AND OTHER ELECTRICAL EQUIPMENT ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. EXACT LOCATION SHALL BE DETERMINED TO SUIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
6. ALL EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHOWN ON THE PLANS IS FOR REFERENCE AND SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED. LOCATIONS ARE APPROXIMATED. ANY DAMAGE TO THE EXISTING ELECTRICAL AND COMMUNICATION EQUIPMENT SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.
7. NEW CIRCUIT BREAKERS TO BE INSTALLED TO EXISTING PANEL BOXES SHALL MATCH THE EXISTING TYPE OR APPROVED BY THE ENGINEER AS REQUIRED.
8. ALL DIMENSIONS INDICATED ARE TO BE VERIFIED IN FIELD PRIOR TO COMMENCING WORK.
9. THE CONTRACTOR SHALL IDENTITY AND VERIFY ALL EXISTING UTILITIES, POWER SOURCES AND POWER CONSUMPTIONS AS REQUIRED OR NEEDED AS SHOWN ON THE PLANS PRIOR TO COMMENCING WORK.
10. SEE STRUCTURAL PLANS FOR EXACT LOCATION OF CMS STRUCTURES, FRAMES AND MOUNTING BRACKETS.
11. ALL ABOVE GROUND CONDUIT SHALL BE SUPPORTED AT A MINIMUM OF EVERY 5 FEET.
12. ALL ELECTRICAL ITEMS THAT USE ANCHORS TO ATTACH TO THE CONCRETE STRUCTURES SHALL USE STAINLESS STEEL POWER STUD ANCHORS-THREADED VERSION SIZED PER MANUFACTURER RECOMMENDATION AND EPOXY ANCHOR HOLES USING SEALANT WITH A RATED LIFE OF 25 YEARS OR GREATER.
13. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE CEC, NEC & NATIONAL ELECTRICAL SAFETY CODE. ALL COMPONENTS SHALL BE PROPERLY GROUNDED AND BONDED PER NEC REQUIREMENTS. ALL COMPONENTS INCLUDING CONDUITS JUNCTION BOXES, CABLING, EQUIPMENT, AND CABINETS SHALL BE CLEARLY LABELED WITH PROPER TAGS, NAME PLATES, AND I.D. LABELS.
14. CONTRACTOR SHALL USE TYPE 1 CONDUIT IN TUNNEL AND TRENCH, TYPE 2 CONDUIT FOR EXPOSED CONDITIONS AND TYPE 4 FLEXIBLE CONDUIT AS SHOWN ON PLANS.
15. ALL EXTERIOR PULL BOXES AND JUNCTION BOXES SHALL BE NEMA 4X.
16. ALL ELECTRICAL AND EXTERIOR CONNECTIONS SHALL BE WEATHERPROOF.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ANY EXISTING CONDUIT AND/OR JUNCTION BOXES TO BE USED ON THIS CONTRACT PRIOR TO PULLING NEW CABLE THROUGH. ANY DAMAGE TO NEW OR EXISTING CABLE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT NO ADDITIONAL COST TO BATA.

## LEGEND:

- CHANGEABLE MESSAGE SIGN
- EXISTING CONDUIT
- EXISTING CONDUIT WITH NEW CABLE
- NEW CONDUIT
- JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW CMS MINI TOLL PLAZA FIELD CABINET
- P# NEW CMS PLAZA CABINET
- P# EXISTING CMS PLAZA CABINET
- CONDUIT IN
- CONDUIT OUT
- X-Y LANE X TO LANE Y CABLES
- TERMINAL BLOCK
- fo EXISTING FIBER OPTIC CABLE
- EXISTING TRAFFIC SIGNAL INDICATOR
- QUAD RECEPTICAL
- DUPLEX RECEPTICAL
- S NEW INDICATOR LIGHT SWITCH CONSOLE PANEL
- RISER CONDUITS
- DROP CONDUITS
- NEW LED INDICATOR BOX
- IS EXISTING INDICATOR LIGHT SWITCH

## ABBREVIATIONS:

| | |
|---|---|
| AM | AMBER |
| BK | BLACK |
| BL | BLUE |
| BN | BROWN |
| C | CONDUIT |
| CAB | CABINET |
| CEC | CALIFORNIA ELECTRICAL CODE |
| CMS | CHANGEABLE MESSAGE SIGN |
| COMM | COMMUNICATIONS |
| CPB | COMMUNICATIONS PULL BOX |
| CKT | CIRCUIT |
| E | EXISTING |
| ETC | ELECTRONIC TOLL COLLECTION |
| FDU | FIBER DISTRIBUTION UNIT |
| FO | FIBER OPTIC |
| GFI | GROUND FAULT INTERRUPT |
| GN | GREEN |
| ILB | INDICATOR LIGHT BOOTH |
| ILC | INDICATOR LIGHT CANOPY |
| ILP | INDICATOR LIGHT PANEL |
| J-BOX | JUNCTION BOX |
| JB | JUNCTION BOX |
| KVA | KILO-VOLT AMPERE |
| LCD | LIQUID CRYSTAL DISPLAY |
| LED | LIGHT EMITTING DIODE |
| MLO | MAIN LUG ONLY |
| NEC | NATIONAL ELECTRICAL CODE |
| N | NEUTRAL (GROUNDED CONDUCTOR) |
| ORT | OPEN ROAD TOLLING |
| PB | CEILING/WALL MOUNTED PULL BOX |
| PCC | PORTLAND CEMENT CONCRETE |
| PNL | PANEL |
| PVC | POLYVINYL CHLORIDE CONDUIT |
| PWR | POWER |
| RMC | RIGID METAL CONDUIT |
| R# | RELAY (# = RELAY NUMBER) |
| RD | RED |
| SS | STAINLESS STEEL |
| TEES | TRANSPORTATION ELECTRICAL EQUIPMENT |
| SM | SINGLE MODE |
| TB | TERMINAL BLOCKS |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYPE A CABLE | 36 SINGLE MODE FIBER OPTIC CABLE |
| TYPE D CABLE | 12 SINGLE MODE FIBER OPTIC CABLE |
| TYPE 1 CONDUIT | GALVANIZED RIGID STEEL (GRS) |
| TYPE 2 CONDUIT | TYPE 1 CONDUIT COATED WITH PVC OR POLYETHYLENE |
| TYPE 4 CONDUIT | LIQUIDTIGHT FLEXIBLE METAL CONDUIT |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| XFMR | TRANSFORMER |
| YL | YELLOW |

## STANDARD NOTES:

- BC INSTALL PULL BOX IN EXISTING CONDUIT RUN.
- CB INSTALL CONDUIT INTO EXISTING PULL BOX.
- SC SPLICE NEW TO EXISTING CONDUCTORS.
- AB ABANDONED
- RD REMOVE AND DISPOSE
- RS REMOVE AND SALVAGE

## WIRING DIAGRAM LEGEND:

- CB CIRCUIT BREAKER
- NB NEUTRAL BUS
- GB GROUND BUS
- ENCLOSURE BOND
- GROUNDING ELECTRODE
- CIRCUIT BREAKER
- R RECEPTACLE

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 92 | R2.59 | 104 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

RAMSEY J. HISSEN, No. C-39608, Exp. 12/31/10, CIVIL, REGISTERED PROFESSIONAL ENGINEER, STATE OF CALIFORNIA

PLANS APPROVAL DATE

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## INDEX:



| REVISION NO. | DATE ISSUED | REMARKS |
|---|---|---|
| 2 | 3/26/10 | CMS EXPANSION, INDICATOR LIGHT CONTROL, CMS POWER |
| | | |
| | | |

# GENERAL NOTES, LEGEND, ABBREVIATIONS AND INDEX OF DRAWINGS (SAN MATEO - HAYWARD BRIDGE)

E-1

| SHEET | OF |
|---|---|
| 1 | 20 |

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## PROJECT NOTES:

1. INSTALL NEW TYPE D CABLE IN EXISTING CONDUIT.
2. INSTALL NEW TYPE D CABLE.
3. INSTALL NEW TYPE 2 (1" C) CONDUIT WITH (2 #12 AND 1 #12G)[2] (120 V, CMS CABINET) AND PROVIDE CONDUIT SUPPORT.
4. USE SPARE 15A-1P CIRCUIT BREAKER (#14) TO FEED NEW CMS CONTROL CABINET.
5. INSTALL NEW ONE (1) 15A-IP CIRCUIT BREAKER FOR NEW CMS CABINET IN (E) SPACE 42.
6. INSTALL TYPE 1 (¾" C) CONDUIT WITH (2 #12 AND 1 #12G)[2] (120 V, CMS CABINET) AND PROVIDE CONDUIT SUPPORT.
7. REMOVE AND REPLACE TWO (E) 20A-1P CIRCUIT BREAKERS #6 AND #7 WITH TWO (2) 15A-1P BREAKERS (120V, CMS SIGNS).
8. INSTALL TYPE 3 JUNCTION BOX BELOW CANOPY AS SPECIFIED IN CONTRACT DOCUMENTS.
9. INSTALL NEW CAT-5e CABLE.
10. ALL WALL, CEILING AND FLOOR PENETRATIONS SHALL BE CORE-DRILLED AS DIRECTED AND APPROVED BY CALTRANS SUFFICIENTLY LARGE TO ACCOMMODATE CONDUIT PLUS FLUSH MOUNTED END BELL. ALL CORE-DRILLS SHALL BE MADE WATER-TIGHT, SEALED AROUND CONDUIT PER CALTRANS REQUIREMENTS WITH FAST-SETTING EPOXY RESIN THROUGHOUT THE DEPTH OF HOLE.
11. INSTALL NEW INDICATOR LIGHT CANOPY CABLE.
12. INSTALL NEW INDICATOR LIGHT BOOTH CABLE.
13. INSTALL NEW INDICATOR LIGHT CONSOLE CABLE.
14. INSTALL NEW CMS COMM CABLE.
15. EXISTING TYPE 3 JUNCTION BOX BELOW CANOPY.
16. INSTALL NEW TYPE 2 EQUIPMENT RACK. SEE SHEET E-3 AND SPECIFICATIONS FOR SIZE AND TYPE.
17. INSTALL NEW TYPE 4 (1½" C) CONDUIT.
18. INSTALL NEW FIBER OPTIC DUPLEX JUMPER CABLES.
19. (E) FDU TO REMAIN.
20. REMOVE AND DISPOSE OF EXISTING INDICATOR LIGHT CABLE.
21. INSTALL NEW CMS PANEL AS SPECIFIED IN CONTRACT DOCUMENTS.
22. REPLACE EXISTING RED INDICATOR LIGHT WITH NEW RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.
23. ROUTE NEW CABLES THROUGH EXISTING CONDUIT.
24. MODIFY EXISTING GREEN INDICATOR LIGHT AND REPLACE WITH GREEN/FLASHING AMBER LED INDICATOR BULB. REPLACE EXISTING RED INDICATOR LIGHT WITH RED LED INDICATOR BULB. IF EXISTING RED INDICATOR LIGHT IS LED, FURNISH NEW RED LED INDICATOR BULB TO BATA AS A SPARE.
25. INSTALL NEW TYPE 2 (1½" C) CONDUIT.
26. INSTALL NEW GROUND MOUNT CMS MINI TOLL PLAZA FIELD CABINET FOR LANES 8-10 AS SPECIFIED IN CONTRACT DOCUMENTS.
27. ROUTE NEW CMS COMM CABLE THROUGH EXISTING JUNCTION BOX.
28. INSTALL NEW CMS PLAZA CABINET FOR LANES 6-7 AS SPECIFIED IN CONTRACT DOCUMENTS.
29. INSTALL INDICATOR LIGHT SWITCH CONSOLE PANEL.
30. REMOVE EXISTING INDICATOR LIGHT SWITCH IN TOLL BOOTH.
31. INSTALL NEW CMS CONTROLLERS. ROUTE CAT-5E PATCH CABLES FROM EACH CMS CONTROLLER TO NEW ETHERNET SWITCH IN EXISTING CMS CABINET.
32. INSTALL NEW TYPE 1 (2" C) CONDUIT.
33. INSTALL NEW TYPE 2 (2" C) CONDUIT.
34. INSTALL TYPE 1 JUNCTION BOX AS SPECIFIED IN CONTRACT DOCUMENTS.
35. INSTALL NEW TYPE 1 (1½" C) CONDUIT.
36. INSTALL NEW 4"X4"X4" JUNCTION BOX
37. DISCONNECT AT (E) PANEL-Q BRANCH CIRCUITS #13, 15, AND 17, AND LABEL BREAKERS AS SPARES.
38. INSTALL NEW TYPE 4 (2" C) CONDUIT
39. INSTALL AND TERMINATE INDICATOR LIGHT CABLES TO NEW TERMINAL BLOCKS AND WIRE TO SWITCH PANEL AS SHOWN IN PLANS AND APPROVED BY THE ENGINEER.
40. INSTALL LB FITTING.
41. INSTALL NEW LED PUSH BUTTON INDICATOR BOX.
42. PROVIDE NEW REVISED (TYPED WRITTEN) PANEL SCHEDULE.
43. INSTALL NEW TYPE 4 (1" C) CONDUIT.

# PROJECT NOTES
# (SAN MATEO - HAYWARD BRIDGE)

E-2

| SHEET | OF |
|---|---|
| 2 | 20 |

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| ITEM | COMPONENT |
|---|---|
| ① | INSTALL NEW CMS CONTROLLER. |
| ② | REMOVE AND SALVAGE EXISTING ETHERNET SWITCH AT CABINET BOTTOM AND FURNISH AND INSTALL NEW RACK MOUNTABLE SWITCH WITH 14-10/100BASE-T AND 2-100BASE-FX(SM) PORTS. FIBER PORT TO MATCH EXISTING.INSTALL NEW SWITCH RIGHT UNDER CMS CONTROLLER (RACK MOUNTED-NO SHELVES. |
| ③ | EXISTING PLAZA F.O. PATCH PANEL. ADD 12 POSITION CONNECTOR PANEL TO ACCOMODATE NEW FIBER. |
| ④ | REMOVE/REPLACE EXISTING POWER STRIP WITH NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP. |
| ⑤ | EXISTING UPS TO BE REMOVED |
| ⑥ | NEW ELECTRICAL PANEL |

| ITEM | COMPONENT |
|---|---|
| ⑦ | EXISTING DATA TVSS TO BE REMOVED. |
| ⑧ | NEW 15 AMP GFI OUTLET |
| ⑨ | REMOVE EXISTING 15 AMP OUTLET |
| ⑩ | REMOVE EXISTING 1/4 AMP BREAKERS. |
| ⑪ | EXISTING ELECTRICAL PANEL |
| ⑫ | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| ⑬ | REMOVE/REPLACE EXISTING CMS CONTROLLERS WITH NEW CMS CONTROLLERS. |
| ⑭ | MOVE EXISTING EQUIPMENT TO ACCOMODATE NEW CABINET LAYOUT. |
| ⑮ | NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP |

| ITEM | COMPONENT |
|---|---|
| ⑯ | ONE (1) NEW 2 AMP BREAKER (120 VAC) |
| ⑰ | ONE (1) NEW NEC CLASS 3, 100 WATT 1:1, 120 VAC TRANSFORMER |
| ⑱ | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| ⑲ | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| ⑳ | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. SEE SHEET E-20 FOR CABINET DRAWER LAYOUT. |
| ㉑ | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120 VAC) FOR POWER INDICATION |

NOTES:

1. EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS.
2. REMOVED EQUIPMENT AND MATERIALS SHALL BE RETURNED TO BATA.
3. INSTALL NEW F.O. PATCH (CONNECTOR) PANEL NEXT TO EXISTING F.O. PATCH PANEL.
4. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
5. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
6. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS.
7. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.
8. CONTRACTOR TO LEAVE ONE (1) RACK UNIT OF SPACE AT BOTTOM OF CABINET.
9. EXISTING CMS CONTROLLER TO BE REPLACED WITH NEW CONTROLLER. NEW CMS CONTROLLER TO BE PROVIDED BY BATA.

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 92 | R2.59 | 110 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

RAMSEY J. HISSEN No. C-39608 Exp.12/31/10 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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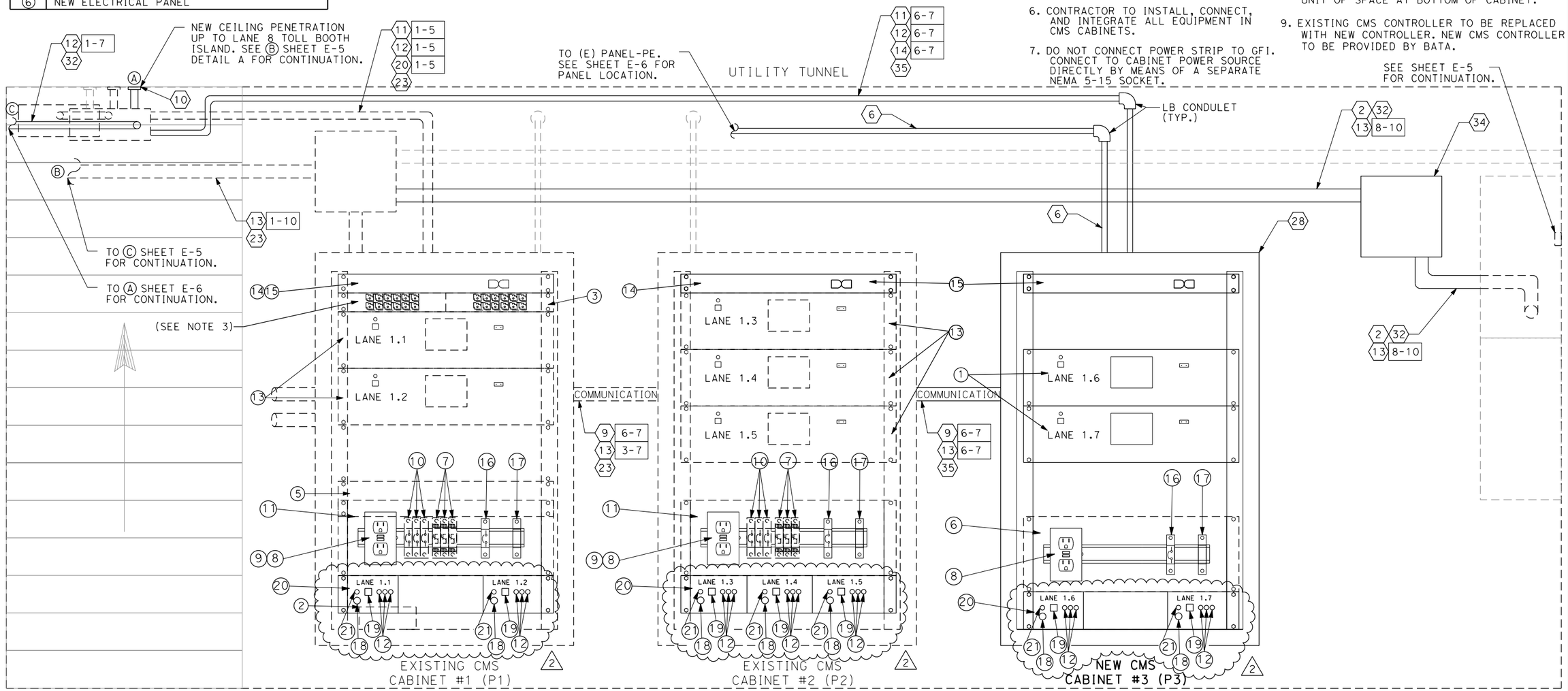


## LANES 1-7 CMS CABINET ELEVATION VIEW

(SEE SHEET E-5 FOR CMS CABINET LOCATIONS)

# LANES 1-7 CMS CABINETS ELEVATION VIEW (SAN MATEO - HAYWARD BRIDGE)

NO SCALE

E-7

| SHEET | OF |
|---|---|
| 7 | 20 |

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| ITEM | COMPONENT |
|---|---|
| 1 | NEW CMS CONTROLLERS |
| 2 | NEW 14-PORT RACK MOUNTABLE ETHERNET SWITCH WITH 2 FIBER PORTS. |
| 3 | NEW FIBER PATCH PANEL |
| 4 | NEW RACK MOUNTABLE IP ADDRESSABLE POWER STRIP |
| 5 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 6 | NEW ELECTRICAL PANEL |

| ITEM | COMPONENT |
|---|---|
| 7 | ONE (1) NEW 2 AMP BREAKER (120 VAC) |
| 8 | NEW 15 AMP GFI OUTLET |
| 9 | ONE (1) NEW NEC CLASS 3, 100 WATT 1:1, 120 VAC TRANSFORMER |
| 10 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. SEE SHEET E-20 FOR CABINET DRAWER LAYOUT. |
| 11 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 12 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 13 | NEW PANEL MOUNT RED, GREEEN, AMBER LED INDICATOR LIGHTS (120VAC) |

## SHEET NOTES:

1. CONTRACTOR TO ROUTE NEW CONDUITS BEHIND EXISTING CABINETS AND PROVIDE CONDUIT SUPPORTS.
2. REMOVE AND SCRAP (E) EMS DIMMING CONTROL CABLES BACK TO (E) MINI TOLL PLAZA CABINET #2.
3. EXISTING TYPE 2 (1½" C) CONDUIT WITH 6 #12 & 3 #12G (120V, CMS SIGN POWER), TO (E) PANEL-Q.
4. ALL CABLING IN CMS CABINETS SHALL BE INSTALLED AND NEATLY DRESSED AND SECURED IN CABINETS. SPARE COILED CABLING SHALL BE PROVIDED IN JUNCTION BOXES.
5. CONTRACTOR TO INSTALL, CONNECT, AND INTEGRATE ALL EQUIPMENT IN CMS CABINETS (I.E., TRANSFORMERS, BREAKERS, ETC.).
6. CABINET AND EQUIPMENT TO MEET CALTRANS TEES REQUIREMENTS.
7. DO NOT CONNECT POWER STRIP TO GFI. CONNECT TO CABINET POWER SOURCE DIRECTLY BY MEANS OF A SEPARATE NEMA 5-15 SOCKET.
8. CONTRACTOR TO LEAVE ONE (1) RACK UNIT OF SPACE AT BOTTOM OF CABINET.

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 92 | R2.59 | 111 | 123 |

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PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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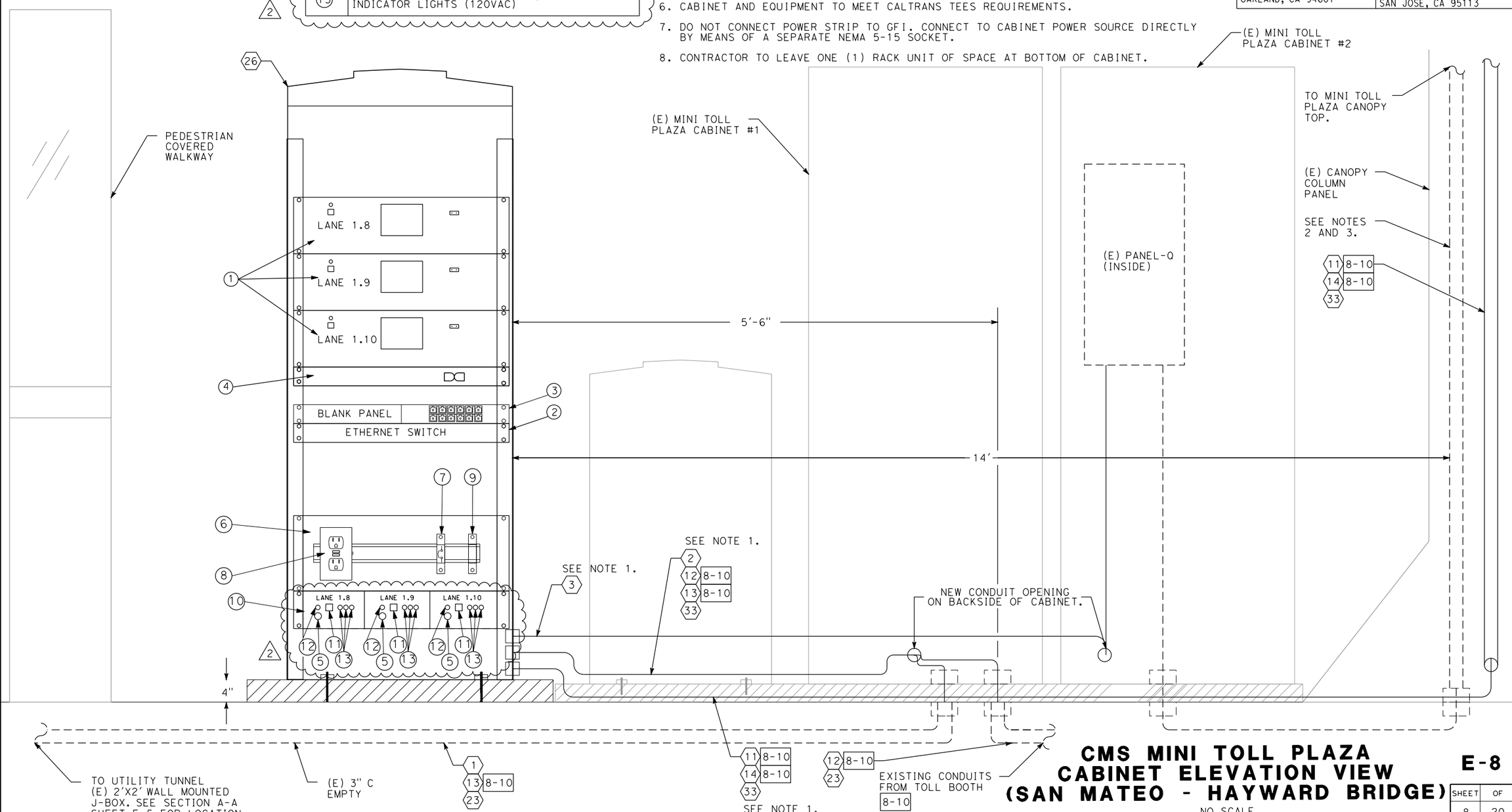


# CMS MINI TOLL PLAZA CABINET ELEVATION VIEW (SAN MATEO - HAYWARD BRIDGE)

NO SCALE

E-8

| SHEET | OF |
|---|---|
| 8 | 20 |

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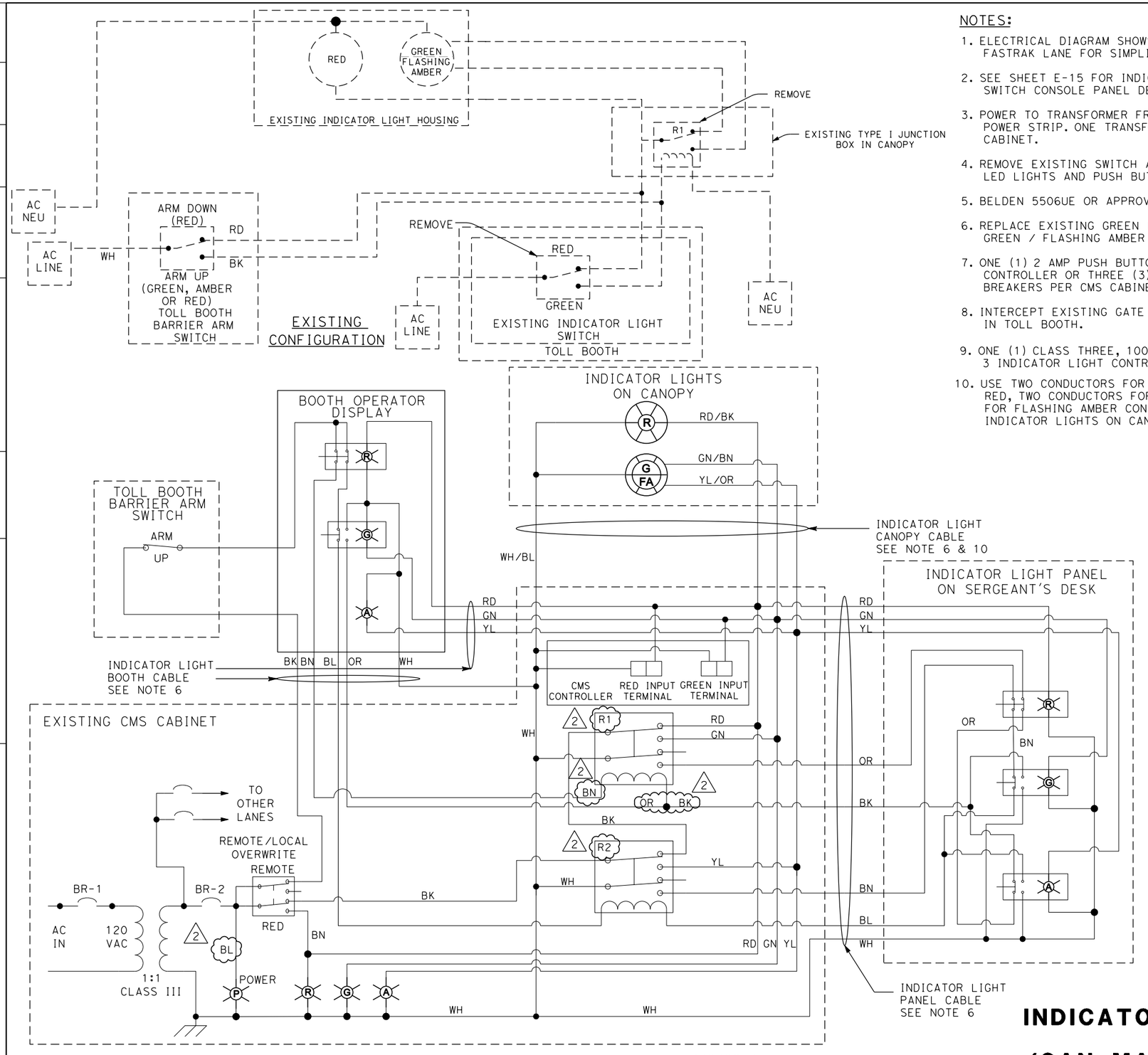


## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-15 FOR INDICATOR LIGHT SWITCH CONSOLE PANEL DETAIL.
3. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
4. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
5. BELDEN 5506UE OR APPROVED EQUIVALENT.
6. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
7. ONE (1) 2 AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) 2 AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
8. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 INDICATOR LIGHT CONTROL LANES.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

## LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- CMS CABINET TERMINAL BLOCK X-B
  X = LANE NUMBER
  B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 1/2 AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 7)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 92 | R2.59 | 119 | 123 |

REGISTERED CIVIL ENGINEER — DATE 3/12/10

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 CIVIL — STATE OF CALIFORNIA

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# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 1-5 (SAN MATEO - HAYWARD BRIDGE)

NO SCALE

E-16

| SHEET | OF |
|---|---|
| 16 | 20 |

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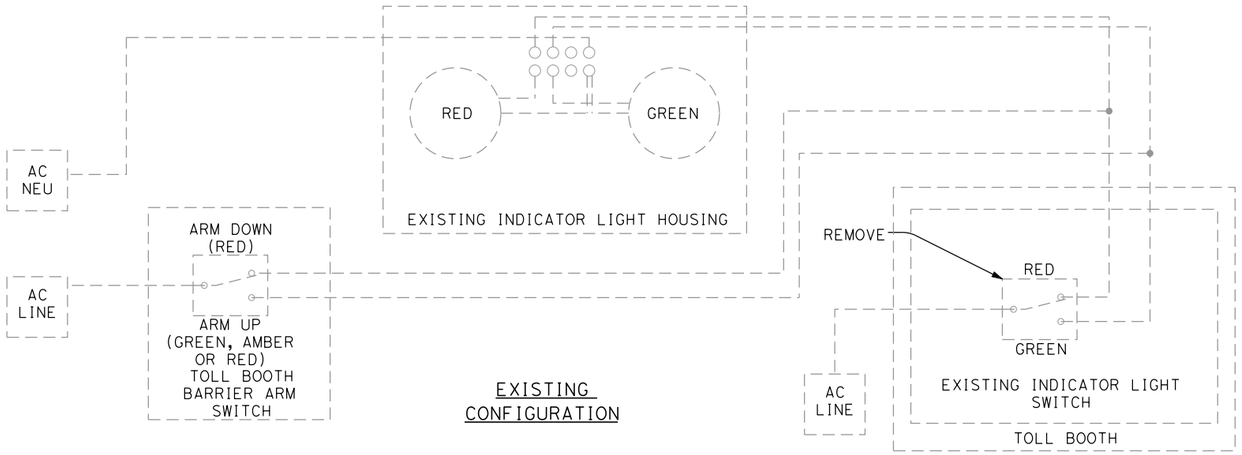
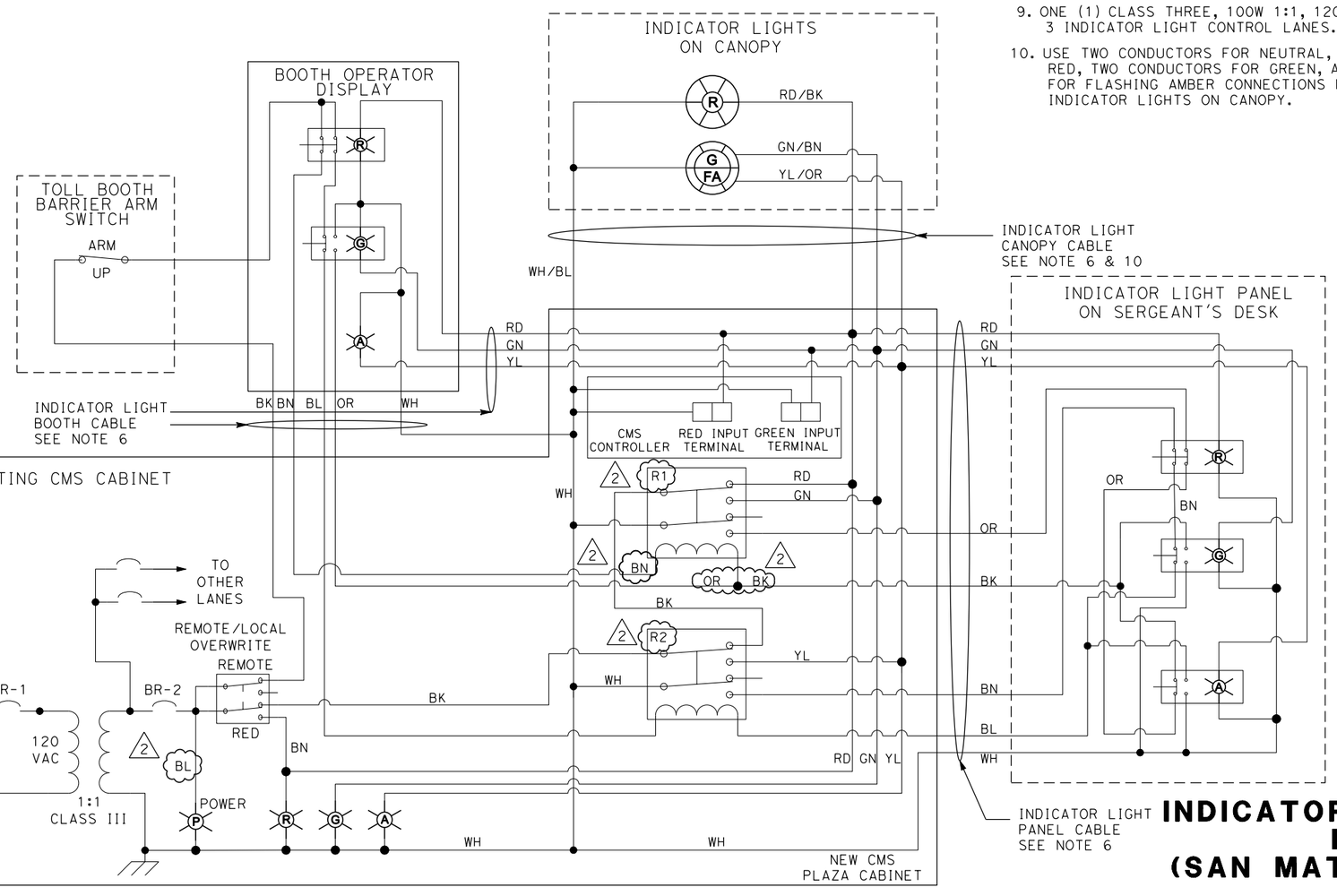



EXISTING CONFIGURATION




PROPOSED CONFIGURATION

## NOTES:

1. ELECTRICAL DIAGRAM SHOWS A SINGLE (ONE) FASTRAK LANE FOR SIMPLICITY.
2. SEE SHEET E-15 FOR INDICATOR LIGHT SWITCH CONSOLE PANEL DETAIL.
3. POWER TO TRANSFORMER FROM CMS CABINET POWER STRIP. ONE TRANSFORMER PER CMS CABINET.
4. REMOVE EXISTING SWITCH AND INSTALL NEW INDICATOR LED LIGHTS AND PUSH BUTTON SWITCHES ON WALL BOX.
5. BELDEN 5506UE OR APPROVED EQUIVALENT.
6. REPLACE EXISTING GREEN INDICATOR LIGHT ON CANOPY WITH NEW GREEN / FLASHING AMBER LED LIGHT.
7. ONE (1) 2 AMP PUSH BUTTON BREAKER PER CMS CONTROLLER OR THREE (3) 2 AMP PUSH BUTTON BREAKERS PER CMS CABINET WITH 3 CMS CONTROLLERS.
8. INTERCEPT EXISTING GATE ARM CABLE IN TOLL BOOTH.
9. ONE (1) CLASS THREE, 100W 1:1, 120 VAC TRANSFORMER PER 3 INDICATOR LIGHT CONTROL LANES.
10. USE TWO CONDUCTORS FOR NEUTRAL, TWO CONDUCTORS FOR RED, TWO CONDUCTORS FOR GREEN, AND TWO CONDUCTORS FOR FLASHING AMBER CONNECTIONS FROM CMS CABINET TO INDICATOR LIGHTS ON CANOPY.

## LEGEND

- (G) GREEN INDICATOR LED LIGHT, 120 VAC
- (A) AMBER INDICATOR LED LIGHT, 120 VAC
- (R) RED INDICATOR LED LIGHT, 120 VAC
- (FA) FLASHING AMBER LED LIGHT, 120 VAC
- CMS CABINET TERMINAL BLOCK X-B X = LANE NUMBER B = TERMINAL BLOCK NUMBER
- BR-1 2A AMP BREAKER, 120 VAC (1 PER CMS CABINET)
- BR-2 1/2 AMP PUSH BUTTON BREAKER, 120 VAC (3 PER CMS CABINET - SEE NOTE 7)
- CLASS 3, 100 WATT 1:1,120 VAC TRANSFORMER (PER 3 CMS CONTROLLERS SEE NOTE 9)
- BREAKER
- CANOPY LED INDICATOR
- DPDT SWITCH
- DPDT RELAY
- NC + NC PUSH BUTTON SWITCH W/ INDICATOR
- NC + NO PUSH BUTTON SWITCH W/ INDICATOR
- PANEL MOUNT LIGHT INDICATOR (120 VAC)

# INDICATOR LIGHT WIRING DIAGRAM FOR LANES 6-10 (SAN MATEO - HAYWARD BRIDGE)

NO SCALE

E-17

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 92 | R2.59 | 120 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — RAMSEY J. HISSEN — No. C-39608 — Exp. 12/31/10 — CIVIL — STATE OF CALIFORNIA

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| SHEET | OF |
|---|---|
| 17 | 20 |

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| ITEM | COMPONENT |
|---|---|
| 1 | ONE (1) NEW PANEL MOUNT DPDT TOGGLE SWITCH |
| 2 | NEW PANEL MOUNT RED, GREEN, AMBER LED INDICATOR LIGHTS (120VAC) |
| 3 | 6 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT CANOPY CABLE AND POWER |
| 4 | ONE (1) NEW PANEL MOUNT 1/2 AMP PUSH BUTTON BREAKER (120 VAC) |
| 5 | INSTALL NEW PULL OUT DRAWER FOR WIRING OF NEW INDICATOR LIGHT RELAYS. |
| 6 | TWO (2) NEW DPDT RELAYS |
| 7 | DRILLED HOLES AT BOTTOM OF DRAWER FOR INDICATOR LIGHT CABLES WITH RUBBER GROMMETS. |
| 8 | NEW PANEL MOUNT BLUE LED INDICATOR LIGHT (120VAC) FOR POWER INDICATION |
| 9 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT BOOTH CABLE |
| 10 | 9 POSITION TERMINAL BLOCKS FOR INDICATOR LIGHT PANEL CABLE |

| Dist | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET No. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 04 | Ala | 92 | R2.59 | 123 | 123 |

REGISTERED CIVIL ENGINEER — 3/12/10 DATE

RAMSEY J. HISSEN No. C-39608 Exp. 12/31/10 CIVIL — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

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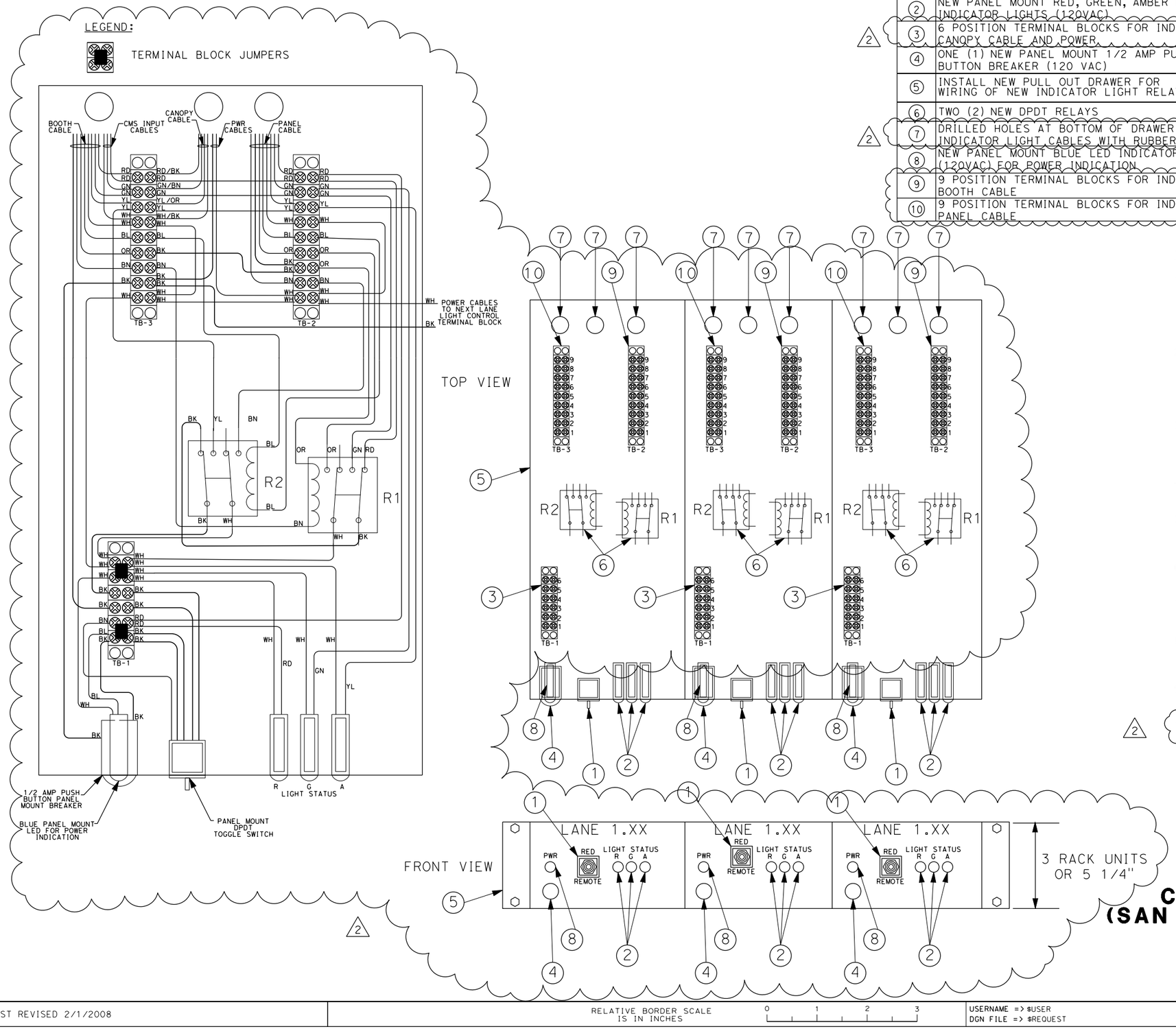


NOTES:

1. ALL EQUIPMENT SHALL BE SECURED. NO EQUIPMENT WILL BE LAYING IN BOTTOM OF CABINET. INSTALLATION SHALL BE NEAT, DRESSED AND ACCORDING TO THE PLANS.
2. CONTRACTOR SHALL SUBMIT MATERIAL SUBMITTALS FOR ALL CABINET COMPONENTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT AND INSTALLATION.
3. INDICATOR LIGHT CABLES TO BE WIRED ACCORDING TO THE INDICATOR LIGHT WIRING DIAGRAM AS SHOWN ON SHEETS E-16 AND E-17.
4. INDICATOR LIGHT DRAWER LAYOUT SHOWN FOR TYPICAL CMS CABINET.
5. ROUTE ALL CABLES THROUGH DRILLED HOLES AT BOTTOM OF DRAWER. INCLUDE PLASTIC GROMMETS IN HOLE.
6. TERMINATE ALL CABLES ON NEW TERMINATION BLOCKS.
7. FASTEN ALL CABLES TO DRAWER TO PREVENT STRAINING ON TERMINATION BLOCKS.
8. EACH CABINET DRAWER SHALL BE DESIGNED TO ACCOMMODATE UP TO FOUR (4) INDICATOR CONTROL LANES.
9. CONTRACTOR TO LEAVE AT LEAST ONE RACK UNIT OF SPACE BETWEEN DRAWER AND BOTTOM OF CABINET.
10. USE TERMINAL LUGS FOR ALL CABLE CONNECTIONS TO TERMINAL BLOCKS.

# INDICATOR LIGHT CABINET DRAWER LAYOUT (SAN MATEO - HAYWARD BRIDGE)

NO SCALE

**E-20**

| SHEET | OF |
|---|---|
| 20 | 20 |

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